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A survey of East Palaearctic *Hersiliola* Thorell, 1870 (Araneae, Hersiliidae), with a description of three new genera

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Abstract

Three new genera and eight new species of Hersiliidae are described from the East Palaearctic (Afganistan, Iran, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan). The genus *Hersiliola* Thorell, 1870 (Araneae: Hersiliidae) is revised, and four new species are described. The genus includes nine species: *H. afghanica* Roewer, 1960 (Afghanistan); *H. esyunini* **sp. n.** (Uzbekistan); *H. foordi* **sp. n.** (Iran); *H. lindbergi* **sp. n.** (Afghanistan); *H. macullulata* (Dufour, 1831) (type species; from Spain and Algeria to Israel and Yemen); *H. simoni* (O.P.-Cambridge, 1872) (from Spain and Morocco to Israel); *H. sternbergsi* **sp. n.** (Turkmenistan, Uzbekistan); *H. versicolor* (Blackwall, 1865) (Cape Verde); and *H. xinjiangenis* (Liang & Wang, 1989) (Xinjiang, China). A new genus *Duninia* **gen. n.** is described, with two new species, *Duninia baehrae* **sp. n.** (type species; Turkmenistan) and *D. rheimsae* **sp. n.** (Iran). A new genus *Deltshevia* **gen. n.** is described, with two new species, *Deltshevia danovi* **sp. n.** (type species; Turkmenistan, Kazakhstan) and *D. gromovi* **sp. n.** (Uzbekistan, Kazakhstan). The widely ranging Central Asian *Hersiliola pallida* Kroneberg, 1875 (Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan) is transferred to a new monotypic genus, *Ovtsharenkoia* **gen. n.**

Keywords

Spider, Central Asia, China, new genus, new species, new combination, *Hersiliola*, *Deltshevia* gen. n., *Duninia* gen. n., *Ovtsharenkoia* gen. n.

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Introduction

Hersiliidae is a globally distributed entelegyne spider family that currently includes 159 species belonging to 12 genera (Platnick 2009; Marusik 2009). Most hersiliid species are found in tropical and subtropical regions. Ranges of only a few species extend north of 40°N. Hersiliids are easily recognizable due to their very long posterior lateral spinnerets. All species of the family are ecribellate. Hersiliidae, together with Oecobiidae, traditionally formed the superfamily Oecobioidea (Lehtinen 1967). Some araneologists also considered Eresidae as a family related to Oecobiidae and Hersiliidae, and placed these three families in Eresoidea (Coddington and Levi 1991).

During the last two decades, this family was subject to extensive studies, which resulted in exhaustive revisions of its Australian, Oriental, Neotropical, and Afrotropical faunas (Baehr and Baehr 1987, 1993, 1998; Rheims and Brescovit 2004; Rheims et al. 2004; Foord and Dippenaar-Schoeman 2005, 2006; Foord 2008), as well as a revision of fossil taxa (Penney 2006). Less attention has been devoted to the small Palaearctic genus *Hersiliola* Thorell, 1870.

Some important changes affecting *Hersiliola* composition have been introduced recently. South African species, formerly included in *Hersiliola*, have been transferred to a new genus *Tyrotama* by Foord and Dippenaar-Schoeman (2005). Fet (2008) transferred the dubious taxa *Hersiliola brachyplura* Strand, 1913 and *H. b. demaculata* Strand, 1914 (both from Israel) to *Oecobius* (Oecobiidae). As a result, Platnick (2009) listed only five valid species of *Hersiliola* with the following geographic ranges: *H. afghanica* Roewer, 1960 (Afghanistan, Turkmenistan); *H. macullulata* (Dufour, 1831) (type species, Mediterranean to Turkmenistan, Burkina Faso); *H. pallida* Kroneberg, 1875 (Central Asia); *H. simoni* (O. P.-Cambridge, 1872) (Mediterranean, Nigeria, Cape Verde Islands), and *H. versicolor* (Blackwall, 1865) (Cape Verde Islands). In addition, Marusik (2009) transferred one species to *Hersiliola* described from China (Xingiang) as *Hersilia xinjiangenis* Liang & Wang, 1989.

Both Mediterranean species, *Hersiliola macullulata* and *H. simoni*, have been recently redescribed (Ribera et al. 1988, Levy 2003, Rheims et al. 2004, Foord and Dippenaar-Schoeman 2005). However, there was no study of *H. macullulata* across its presumed wide range in Central Asia. Also, no revision addressed two other Asian species, *H. afghanica* and *H. pallida.*

The published range of the genus in Asia is quite large, and extends southwards to the Karakoram Mts (northeastern Pakistan; Caporiacco 1935; *H. pallida*) and eastwards to Xingiang (northwestern China; Marusik 2009; *H. xinjiangenis*). *Hersiliola afghanica* was reported as occurring widely across Afghanistan (Denis 1958, Roewer 1960). From Turkey, *H. macullulata* was reported (Hatay Province; Yağmur et al. 2008), but the family was not included in the recent checklist (Bayram et al. 2008).

Published records of *Hersiliola* from five Central Asian republics of the former USSR (now the independent countries of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) have been also sporadic, although spiders of this genus are very common in deserts and dry mountains, found under stones, in rodent burrows

(Krivokhatsky and Fet 1982, Krivokhatsky 1987), and in pitfall traps (Kuznetsov and Fet 1984). Taxonomic placement of Central Asian species so far has been unclear; they were usually identified tentatively as either *H. macullulata* (often misspelled as *maculata*; see below for discussion of correct spelling), *H. pallida*, or *H. afghanica*. No illustrations of male palps from Central Asian *Hersiliola* have been published.

Here, based on extensive new material, we reappraise all hersiliids found in Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan, with a description of six new species and three new genera (*Duninia* gen. n., *Deltshevia* gen. n., and *Ovtsharenkoia* gen. n.). In addition, we describe two new species from Iran (the first record of Hersiliidae for this country).

Material and methods

This paper is based on 238 specimens including 35 collected by the authors (28 specimens collected by VF during his resident work in Turkmenistan in 1975-1984, and 7 specimens collected by YM in Iran in 2000), as well as all available museum material (203 specimens, among them 31 collected by A.V. Gromov during a joint expedition with VF to Uzbekistan and Turkmenistan in 2002). Numerous new specimens from Central Asia reached us, due to the efforts of Alexander Gromov and Dmitri Logunov, when this paper was already finalized; therefore a few descriptions are based on older material (*Ovtsharenkoia* gen. n.) or on a subadult male with a well developed palp (*Deltshevia gromovi* sp. n.).

Specimens were photographed using an Olympus SZX12 stereomicroscope and Olympus Camedia C-5050 camera in the Zoological Museum, University of Turku, Finland. The images were montaged using CombineZM image stacking software.

Whole specimens, palps and unmacerated epigynes were photographed in deep cups with a wax bottom. Depressions of different shape and size were made in wax for fixing specimens in the correct position. Epigynes were macerated using either KOH or lactic acid. In some cases, to make weakly sclerotized structures within epigynes more visible, we used Amido Black 10B (Amidoschwartz, naphthol blue black) amido acid. All measurements are in mm.

Terminology. There are some contradictions in applying terminology for epigynal structures in Hersiliidae. Describing a hersiliid epigyne, Rheims and Brescovit (2004) and Foord and Dippenaar-Schoeman (2005) indicated both S (=spermatheca) and SR (=seminal receptacle). The same two terms were used in their character matrix. In fact, these two terms, derived from either Greek ("spermatheca") or Latin/English ("seminal receptacle"), refer to the same function: depository of sperm into the female epigyne. Ubick et al. (2005) treated these terms as synonyms. In our opinion, such confusion is caused by a specific structure of epigyne, which in most hersiliids contains accessory globular or digitiform structures near the terminal part of fertilization duct. We call these structures "accessory glands" (*Ag*), although their function is unknown.

Abbreviations: Morphological terms used in figures: *Ag*, accessory gland; *As*, accessory sclerite; *Bd*, digitiform part of basal apophysis; *Bl*, lamellate part of basal apo-

physis; *Bm*, mesal part of basal apophysis; *Dp*, deep pocket; *Eb*, base of embolus; *Em*, embolus; *Et*, tip of embolus; *Fd*, fertilization duct; *Fp*, flattened part; *Ha*, horizontal arm of *Te*; *Id*, insemination duct; *Lp*, lateral pocket; *Mp*, median plate; *Pp*, pale (colourless) part of epigyne; *Sd*, seminal duct; *Se*, septum; *Sp*, spermatheca (=receptaculum); *Te*, tegular (median) apophysis; *Ul*, upper loop of *Id*; *Va*, vertical arm of *Te*; *Wi*, window.

Nomenclatural acts (in reference lists): D, described; T, transferred.

Depositories: CAS, California Academy of Sciences, San Francisco, California, USA; GNM, Göteborgs Naturhistoriska Museum, Göteborg, Sweden; HDO, Hope Department, Oxford University, Oxford, UK; MIZST, Museo ed Istituto di Zoologia Sistematica, Università di Torino, Turin, Italy; MNHN, Muséum national d'Histoire naturelle, Paris, France; MZUF, Museo zoologico "La Specola", Università di Firenze, Florence, Italy; SMF, Senckenberg Museum, Frankfurt, Germany; ZMMU, Zoological Museum of Moscow State University, Moscow, Russia.

Taxonomy

Hersiliola Thorell, 1870

Type species. *Aranea macullulata* Dufour, 1831, from Spain.

Diagnosis. *Hersiliola* can be easily distinguished from other Palaearctic hersiliid genera by short spinnerets (shorter than abdomen length) and the shape of copulatory organs: discoid tegulum; long, whip-like coiled embolus; a small tegular apophysis perpendicular to the axis of the palp; insemination ducts coiled around fertilization ducts and uncoiled upper loop. The other three Central Asian genera of Hersiliidae (described here) have either a globular tegulum or have more than one tegular apophysis and uncoiled insemination ducts. From habitually similar African genera (*Tama* Simon, 1882 and *Tyrotama* Foord & Dippenaar-Schoeman, 2005), *Hersiliola* can be distinguished by a digitate cymbium; presence of a hook-like median tegular apophysis; flattened bulbus of the male palp [=discoid tegulum]; a filiform, elongate, spirally coiled embolus; elongate, coiled copulatory ducts; small [relatively smaller] seminal receptacles (Foord and Dippenaar-Schoeman 2005); and some somatic characters. See Foord and Dippenaar-Schoeman (2005) for a detailed redescription of the genus and the type species. See also below for the studied material of the type species and comments on its distribution.

Comments. For a long time this genus, as well as the Afrotropical *Tama*, was diagnosed as a hersiliid with short spinnerets (shorter than abdomen length). All species with short spinnerets were placed in these two genera until Foord and Dippenaar-Schoeman (2005) recognized that species from southern Africa have copulatory organs and some somatic characters very different from *Hersiliola* and *Tama*, and described a new genus *Tyrotama*.

Composition. Here, we assign nine species to *Hersiliola*, including four new species: *H. afghanica* Roewer, 1960 (♀, Afghanistan); *H. esyunini* sp. n. (♂♀, Uzbekistan); *H. foordi* sp. n. (♀, southern Iran); *H. lindbergi* sp. n. (♀, Afghanistan); *H. macullulata*

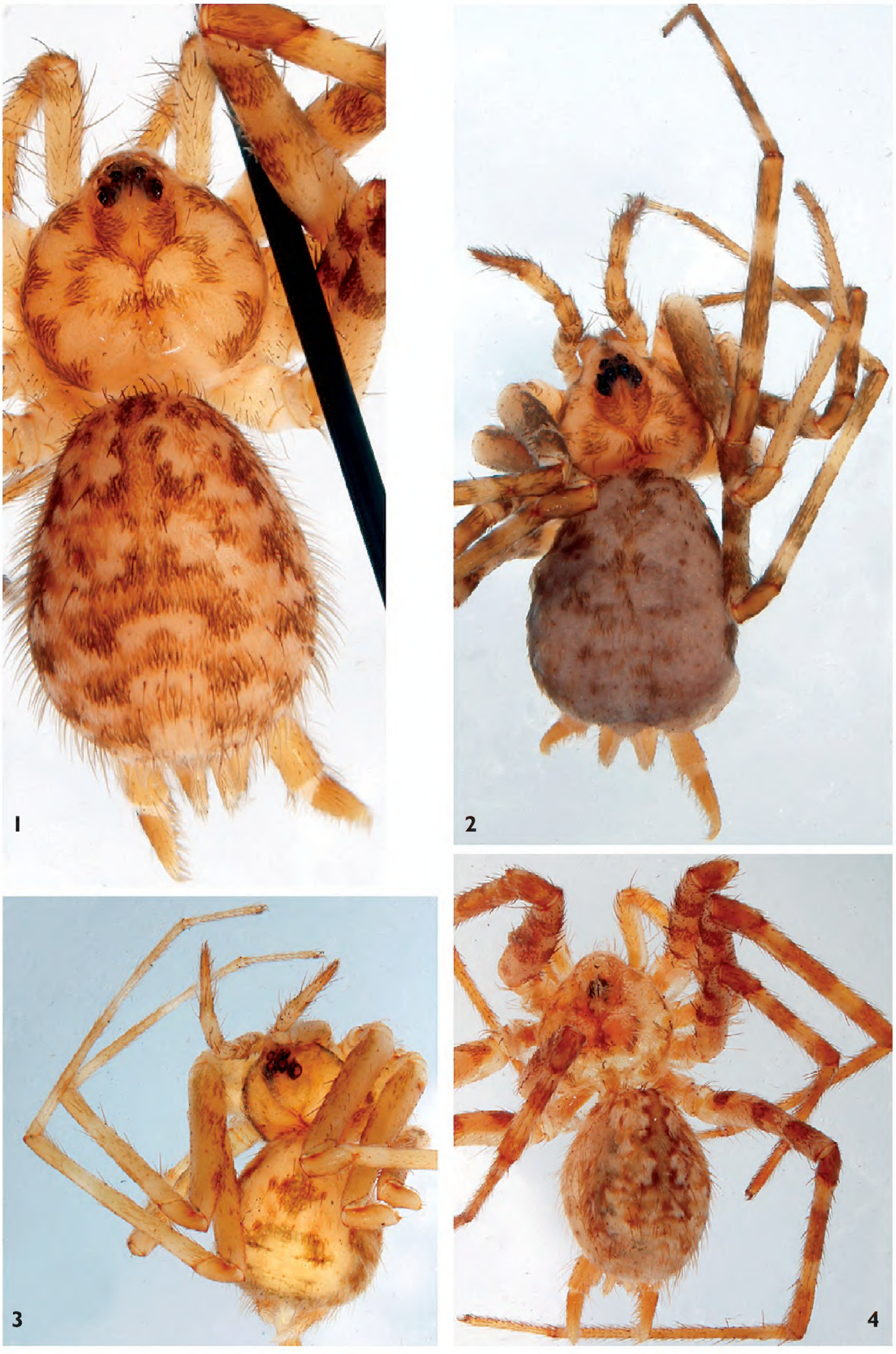

Figure 1. Habitus of females of *Hersiliola sternbergsi* sp. n. (**1**), *H. esyunini* sp. n. (**2**), *H. lindbergi* sp. n. (**3**) and *H. afghanica* (**4**).

Figure 2. *Hersiliola sternbergsi* sp. n. (**1**), *H. esyunini* sp. n. (**2**), *Ovtsharenkoia pallida* (**3-8**). **1** male carapace, frontal **2** carapace, dorsal **3-4** male carapace, dorsal and lateral **5** abdomen of juvenile, dorsal **6-7** habitus of female and male, respectively **8** female abdomen, ventral.

(Dufour, 1831) (♂♀, Spain, Algeria, Libya, Mali, Israel, Yemen); *H. simoni* (O.P.-Cambridge, 1872) (♂♀, from Morocco to Israel); *H. sternbergsi* sp. n. (♂♀, Turkmenistan, Uzbekistan); *H. versicolor* (Blackwall, 1865) (♀, Cape Verde); and *H. xinjiangenis* (Liang & Wang, 1989) (♂♀, Xinjiang, China). Of these, two species, *H. foordi* sp. n. and *H. lindbergi* sp. n., known only from females, could in fact belong to other genera. It is very likely that actual diversity of *Hersiliola* is higher, and it seems that some junior synonyms could be revalidated. *Hersiliola pallida* Kroneberg, 1875 is transferred to a new genus, *Ovtsharenkoia* gen. n. (see below).

Distinguishing characters. Species of *Hersiliola* can be distinguished by the shape of the copulatory organs. The most important diagnostic characters in the male palp are as follows: (1) position of the embolic base; (2) number of embolic coils; (3) shape and position of tegular apophysis; and (4) size of cymbial terminal part. In females, the most important characters are: (1) shape of median plate; (2) number of coils of insemination duct; (3) shape and size of spermathecae; and (4) position of insemination duct attachment to the spermathecae.

Distribution. The genus is found in Europe (Iberian Peninsula), Africa (Algeria, Burkina Faso, Cape Verde, Chad, Libya, Mali, Morocco, Niger), and Asia (from Middle East to Xinjiang). The northern limit of its distribution lies in Xinjiang (44°N). Two Mediterranean species have wide ranges within North Africa and the Middle East. Only one Central Asian species, *H. sternbergsi* sp. n., has a fairly large range. All other species are known either from a single locality or from a few closely located points.

***Hersiliola macullulata* (Dufour, 1831)**
Figs 4.1, 5.1, 6.1

Aranea m. Dufour, 1831: 360, pl. 10, f. 2 (D♀).
Hersilia oraniensis Lucas, 1846: 129, pl. 4, f. 8 (D♂♀).
H. maculata: Ribera et al. 1988: 98, f. 1, 4, 7-8 (♂♀) (misspelling).
H. m.: Levy 2003: 28, f. 57-60 (♂♀).
H. simoni: Rheims and Brescovit 2004: 208, f. 12, 27, 39-42 (♂♀). Misidentification, at least of ♂. Geographical origin of illustrated specimens unknown, maybe Yemen.
H. simoni: Rheims et al. 2004: 344, f. 4-6, 24-32 (♂♀). Misidentification.
H. m.: Foord and Dippenaar-Schoeman 2005: 259, f. 2A-G (♂♀). ♂ appears to be misidentified.
For a full list of references, see Platnick (2009).

Material examined (9 specimens): 1♂, "Algerie, Espagne" (MNHN, No 410); SPAIN: "*Hersiliola maculata* (Dufour) 2♂, Spanien, Franz leg., Wiehle det. SMF". ALGERIA: 1♀, Air, Fezzan, E. Simon det., Dj. Harrasa 26.09.1909 B.S., Ras Four' Lal, 29.09.1909, B.S. (MNHN, B-693); 1♂, El Oued, 100 m, 5.05.1981, E. S. Ross coll. (CAS). LIBYA: 3 ♀, Uadi Kuf, E. Festa coll., L. di Caporiacco det. (MIZST). MALI: 1♂, 10 km E of Sevare, 14°30'N, 04°W, 15.07-1.09.1977, W. H. Settle coll. (CAS).

Diagnosis. Can be easily recognized by its long embolus, starting at position about 5 h and making 1.5 coils (Figs 4.1, 5.1, 6.1); and by the shape of tegular apophysis and epigyne.

Description. Redescribed in detail by Levy (2003) and Rheims et al. (2004, as *H. simoni*).

Comments. This species was described from Spain, and later reported from Algeria, Israel and Burkina Faso. Its types appear to be lost (Levy 2003). It is very likely that that specimens from Burkina Faso (males) illustrated by Foord and Dippenaar-Schoeman (2005) are not conspecific with specimens from Algeria (females). Males from Burkina Faso have their embolus base in another position (at 04 hrs) compared to specimens from Spain or Israel (at 05 hrs). African males may belong to *H. versicolor* Blackwall, 1865, a species known from Cape Verde from females only. Another possibility is that specimen from Burkina Faso had a partially expanded bulbus, and its tegulum was slightly displaced (turned).

Figures of "*H. simoni*" in Rheims and Brescovit (2004) and Rheims et al. (2004) undoubtedly correspond to *H. macullulata*.

Distribution. *H. macullulata* is confirmed here from Spain, Algeria, Israel (Levy 2003; Foord and Dippenaar-Schoeman 2005), Yemen (as *H. simoni*, Rheims et al. 2004), Libya (first record), and Mali (first record). Its records from Burkina Faso (Foord and Dippenaar-Schoeman 2005) and Turkey (Yağmur et al. 2008) could refer to another species. All reported Central Asian populations refer to *H. sternbergsi* sp. n. (Turkmenistan) or *Deltshevia gromovi* gen. n. sp. n. (Kazakhstan).

Note. This name has been commonly listed as "*H. maculata*" although Dufour's original name is *Aranea macullulata*. The name was misspelled as "*H. macululata*" by Simon (1885: 28). Karsch (1881: 7) 'corrected' the name to "*maculata*" which was widely used. Bonnet (1957: 2180; footnote) suggested that *macullulata* is poor Latin, being derived from a non-existent word "macullula" ("a small spot"). The consistent usage for over 100 years still does not validate Karsch's emendation (ICZN Article 32b-c). In fact, Dufour's original description (1831: 360) shows that his intention was to document a pattern of very small spots; and "macullula" is acceptable as an invented Latin word, parallel to the existing terms "medullula" or "ampullula" (H.D. Cameron, pers. comm. 1995).

Hersiliola simoni (O.P.-Cambridge, 1872)

Figs 4.2, 5.2, 6.2-3

Hersiliada simonii O. P.-Cambridge, 1872: 275, pl. 14, f. 9 (D♂♀).
Hersilidia lucasii O. P.-Cambridge, 1876: 562, pl. 58, f. 5 (D♂♀) (Egypt: Alexandria); synonymized by Levy (2003).
H. lucasi: Wiehle 1960: 470, f. 15 (♀) (specimen from Egypt).
H. s.: Ribera et al. 1988: 99, f. 2, 5, 9-10 (♂♀).
H. s.: Levy 2003: 25, f. 47-56 (♂♀, subad.).
H. s.: Rheims and Brescovit 2004: 208, f. 12, 27, 39-42 (♂♀). Misidentification; refers to *H. macullulata*.

H. s.: Rheims et al. 2004: 344, f. 4-6, 24-32 (♂♀). Misidentification; refers to *H. macullulata.*
H. s.: Foord and Dippenaar-Schoeman 2005: 261, f. 3A-G (♂♀).
For a full list of references, see Platnick (2009).

Material examined (28 specimens). Types of *H. simoni*: ISRAEL: Jerusalem, Jericho, holotype ♂, paratypes: 8♀, 6 ♂, 1 subad.♂, 9 subad.♀ (HDO, Bottle 400). Additional material: LEBANON: 1♂, 1893, E. Festa coll., P. Pavesi det. (MIZST Ar. 336); 1♂, 1♀ "H. Simonii, Palästina, leg. 13.09.1931, Wiehle det." (SMF 19407/2)".

Diagnosis. *Hersiliola simoni* can be recognized by the position of the embolic base (ca. 10:30 hrs), a relatively short embolus forming only one coil, and the shape of epigyne. From *H. sternbergsi* sp. n., it differs by a flatter palp with a smaller number of loops, a different position of the embolic base, and a different tegular apophysis.

Description. Redescribed in detail by Levy (2003).

Comments. Figures of *H. simoni* in Rheims and Brescovit (2004) and Rheims et al. (2004) undoubtedly correspond to *H. macullulata*.

Distribution. *Hersiliola simoni* was reported widely from Spain, Morocco, Niger, Cape Verde, Tunisia, Egypt, Libya, Lebanon, Syria, and Israel, although some records are doubtful or incorrect. Records of this species from Cape Verde should, in our opinion, refer to *H. versicolor*, the only species described and properly recorded from these islands (cf. Rheims et al. 2004). The record and illustrations of *H. simoni* from Yemen (Rheims et al. 2004) refer, in our opinion, to *H. macullulata*.

Hersiliola versicolor (Blackwall, 1865)

Fig. 7.1

Hersilia v. Blackwall, 1865: 81 (D♀).
H. v.: Simon 1893: 445.
H. v.: Foord and Dippenaar-Schoeman 2005: 261, f. 4A-D (♀).

Material examined: A slide of an epigyne (SMF, from the H. Wiehle collection) from "Kapeverde, Maio" [=Cape Verde Islands, Maio Island]. Identified as *H. simoni.*

Diagnosis. *H. versicolor* is similar to *H. simoni*, but differs from it by the shape of the median plate of the epigyne, which is much higher and has a wider septum.

Description. Redescribed by Foord and Dippenaar-Schoeman (2005).

Comments. This species is known from females only. The shape of the median plate illustrated by Foord and Dippenaar-Schoeman (2005: fig. 4A) appears to be misinterpreted, judging from the figure of the vulva, and from the specimen (a slide of the epigyne) examined by us. Black dots on their fig. 4A and on our Fig. 7.1 seem to correspond to accessory glands. On the slide, glands seem to be displaced due to pressure from the cover glass.

Distribution. Known only from the Cape Verde Islands.

***Hersiliola* sp.**
Fig. 7.2

H. simoni: Benoit 1974: 997, f. 3, 6 (♀) (?)

Material examined. A slide of the epigyne (SMF, from the H. Wiehle collection) labeled as "*H. macullulata* from Palestine.

Comments. Unlike other species from the Middle East (Israel), this specimen has only one coil of the insemination duct, and it can be expected that its male should have a correspondingly shorter embolus. It could belong to *H. lucasi* (O.P.-Cambridge, 1876), which was described from Egypt and is currently synonymous with *H. simoni*. Conformation of the epigyne is similar to those illustrated by Benoit (1974) from Tunisia and identified as *H. simoni*. Benoit (1974) compared his specimen with those from Egypt.

***Hersiliola afghanica* Roewer, 1960**
Figs 1.4, 7.3-4, 8.1

H. a. Roewer, 1960: 48, f. 16a-d (D♀).

Type material (examined). Holotype ♀, with label "*Hersiliola afghanica* n.sp. 1♀ Typus, 1(♂inad.) A409" (GNM); inadult male is absent from the vial. According to the original publication (Roewer 1960), the holotype was collected in "AFGHANISTAN, Kabul, Mont Sher Dervazeh, under stones (K. Lindberg coll.)".

Note. Roewer (1960) also listed 19 additional specimens ("paratypes") across a wide range in Afghanistan (Mazari-Sharif, Kabul, Jalalabad, etc.), but all of them were indicated as juveniles. However, in the SMF we found a single adult female, clearly designated as a paratype (allegedly of *H. afghanica*), with the following label: "1♀ Paratype, SMF 12996, No. 15, Afghanistan". Holotype (GNM) and paratype (SMF) labels are written by the same hand, presumably by Roewer. Study of this SMF female demonstrated that it belongs to another species, which is described below as *H. lindbergi* sp. n.

Diagnosis. *Hersiliola afghanica* is most similar to *H. sternbergsi* sp. n., from which it can be distinguished by larger spermathecae, shape of the upper loop, and insemination duct terminating on dorsal wall of the spermatheca.

Description. Male unknown. Female: Total length 5.5. Carapace 2.0 long, 2.15 wide, femur I 3.25 long, femur I/carapace length ratio 1.63. General colouration light brown. Carapace in poor condition, pattern is not visible. Abdomen with well developed pattern composed by a heart spot with dark margins; posterior part of abdomen with three transverse stripes. Legs with distinct annulations, light and dark rings equal in width. Coxae IV separated by less than one diameter. Chelicerae and maxillae with strong erect hairs. Epigyne as in Figs 7.3-4, 8.1. Septum as wide as lateral arms of median plate; windows distinct. Insemination duct relatively short; upper loop of coil located over the spermatheca; accessory gland digitiform.

Distribution. Afghanistan (Kabul Province).

Comments. Although this species was reported from a number of localities in Afghanistan, all records except for the holotype ♀ from Kabul are based on juveniles that could be misidentified since other hersiliids (*H. lindbergi* sp. n. or *Ovtsharenkoia pallida*) could occur in this area. Any of these species could also have been reported by Denis (1958) from Pirzada (Afghanistan) as *H. simoni*.

All records of *H. afghanica* from Turkmenistan are misidentifications and refer either to *Duninia baehrae* gen. n. sp. n. or to *Deltshevia danovi* gen. n. sp. n.

***Hersiliola lindbergi* sp. n.**

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Figs 1.3, 7.5-6, 8.3

Type material. Holotype ♀ with label "1♀ Paratyp, SMF 12996, No. 15, Afghanistan", in SMF.

Etymology. The species name is a patronym honoring its collector, Dr. Knut Lindberg (1892-1962) of Lund, Sweden, who conducted an important expedition to Afghanistan between 1957 and 1960.

Note. Roewer (1960) in his description of *H. afghanica* indicated only one adult specimen, the holotype female. All paratypes were juveniles. Labels of the holotype of *H. afghanica* (GNM) and the SMF 12996 "paratype" were written by the same hand, probably by Roewer.

Description. Male unknown. Female: Total length 3.6. Carapace 1.5 long, 1.7 wide, femur I 2.5 long, femur I/carapace length ratio 1.66. General colouration light yellow-brown. Carapace without pattern but with dark margins. Abdomen with a wide heart spot and one transverse stripe; sides with brown bands. Legs without distinct annulations. Chelicerae and maxillae without strong setae. Coxae IV separated by less than one diameter.

Epigyne as in Figs 7.5-6, 8.3, with septum as wide as epigyne openings; median plate not separated from the epigynal plate; translucent spermathecae small and round, close to each other, their diameter approximately equals width of epigyne openings, windows absent; spermathecae separated from the opening by three diameters; insemination ducts long, making six coils around fertilization duct; the upper loop well-developed; accessory glands small, digitiform.

Diagnosis. *H. lindbergi* sp. n. clearly differs from other species by the very long insemination ducts making six coils and an apical loop. It can be also distinguished by small round spermathecae, the shape of the septum and the epigyne openings.

Comments. There is a certain possibility that *H. lindbergi* sp. n. belongs to another genus. Unlike in *H. maculullata*, *H. afganica*, *H. simoni*, *H. sternbergsi* sp. n., *H. versicolor*, and *Duninia baehrae* sp. n., the median plate in this species is not separated from the epigynal plates and has no accessory sclerites or windows. The position of *H. lindbergi* sp. n. cannot be confirmed until a male is found.

Distribution. Afghanistan, without a precise locality.

***Hersiliola foordi* sp. n.**
urn:lsid:zoobank.org:act:4915C8CC-EEF2-451F-A481-5BA06F4EF454
Figs 7.13-14, 8.5

Type material (3 specimens): Holotype 1♀, IRAN [01] Fars Province, 50 km NNE of Shiraz, Bamoo Reserve, 52°45'E 29°45'N, 18-28.05.2000, Yu.M. Marusik coll. (ZMMU). Paratypes: 1♀, 1 juv.♀, IRAN [09] Fars Province, Shiraz, 52.533°E 29.607°N, 18-26.05.2000, Yu.M. Marusik coll. (ZMMU).

Etymology. The species name is a patronym honouring our colleague Stefan H. Foord (Thohoyandou, South Africa), for his contributions to in-depth modern studies of Hersiliidae.

Description. Male unknown. Female: Total length 5.01-5.75. Carapace 2.1-2.25 long, 2.2-2.45 wide, femur 3.1-3.75 long, femur I/carapace length ratio 1.47-1.67. Coxae IV separated only slightly. Abdominal pattern such as in holotype of *H. afghanica* formed by short flat hairs of orange-light brown, dark brown, and white colour.

Epigyne as in Figs 13-14, 8.5, with septum as wide as lateral arms of median plate; median plate not well separated from epigynal plate; translucent spermathecae oval, separated by their length (height) from the epigynal opening; insemination duct short, with only one loop; fertilization duct with a long appendix-like accessory gland extending along the duct.

Diagnosis. *Hersiliola foordi* sp. n. can be easily distinguished from all other congeners by its very short and wide insemination ducts, unseparated median plate, and lack of windows.

Comments. This species, like *H. lindbergi* sp. n., could belong to a separate genus. Its median plate is not separated from the rest of the epigynal plate. It also has no accessory sclerites and no windows.

Distribution. The species is known only from two nearby localities near Shiraz, southern Iran.

***Hersiliola sternbergsi* sp. n.**
urn:lsid:zoobank.org:act:5D8AF1B1-75A1-4512-8E59-EFEAA36294D6
Figs 1.1, 2.1, 3.2, 4.3, 5.3, 6.4-5, 7.7-9, 8.2

H. maculata: Vlassov and Sytchevskaya 1937: 248 (Turkmenistan: Ashgabat); Kaplin 1978: 35 (Turkmenistan: Repetek); Krivokhatsky and Fet 1982: 69-70 (Repetek); Fet 1983: 837; Fet 1984: 259; Krivokhatsky 1987: 96 (Repetek). Misidentification and misspelling.

H. pallida: Spassky 1952: 196, 200 (in part); Sabirova 1975: 79 (Repetek); Ovtsharenko and Fet 1980: 443 (Turkmenistan: Badghyz). Misidentification.

H. sp. 2: Mikhailov and Fet 1994: 504 (in part).

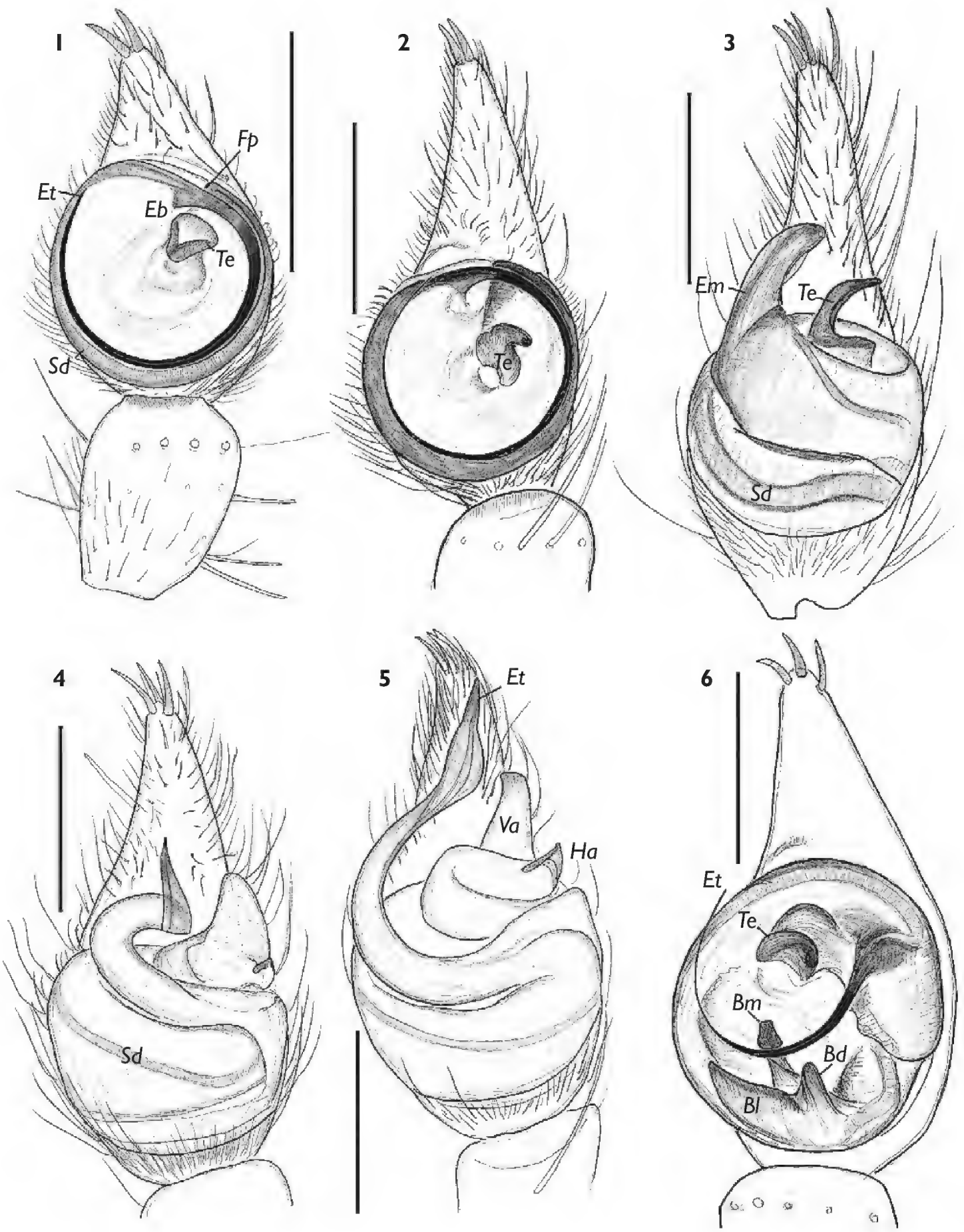

Figure 3. Retrolateral view of the male palp of *Hersiliola esyunini* sp. n. (**1**), *H. sternbergsi* sp. n. (**2**), *Duninia baehrae* sp. n. (**3**), *Deltshevia danovi* sp. n. (**4**), *D. gromovi* sp. n. (**5**), and *Ovtsharenkoia pallida* (**6**). Scale = 0.5 mm.

Type material (49 specimens). Holotype: ♂ and paratypes 3♀, 4 juv. (ZMMU) with a label "TURKMENISTAN, Lebap Area, Karakum Desert, Repetek Reserve, NW environs of Repetek, 200 m, sands, 38°33'57-59"N 63°09'46"–10'13"E, 14.04.2002, A.V. Gromov coll."

Paratypes. TURKMENISTAN: 1♂, 1♀, 2 subad.♀, 5 juv., Balkan Velayati (=Province), Turkmenbashi (=Krasnovodsk), 21.01.1978, K.G. Mikhailov coll. (ZMMU, Ta-3091); 3 juv., Balkan Province, Tuarkyr Mts., Kafigshem Plateau, 7.11.1982, V. Fet coll.; 1♀ (ZMMU), Lebap Province, East Karakum, Repetek Reserve, 170 m a.s.l., 05-06.1914, N.N. Plavilshchikov coll. (ZMMU); 1 subad.♀, attracted by light, 6.05.1972, V.I. Kuznetsov coll. (ZMMU); 2♀, 13.05.1981 (SMF); 1♂, 7.03.1982 (SMF); 1♂, 8.06.1982 (ZMMU), V.A. Krivokhatsky coll.; 1♂, 2♀ ZMMU), 18.04.1993, S.V.Ovtchinnikov coll.; 2♂, 2♀, Lebap Province, Karakum Desert, Repetek Reserve, Repetek, 170 m, 38°33'55"N 63°10'46"E, 17.04.2002, A.V. Gromov coll. (ZMMU); 1♂, Lebap Province, Amudarya Reserve, Kabakly, 4-14.05.1987, F. Zeleev coll. (ZMMU); 2♀ (ZMMU), Mary Province, Sultanbent, 05.1929, V.I. Sytchevskaya coll. (ZMMU); 1♀, 1juv., Mary Province, NE vicinities of Serhetabad (=Kushka), Kushka River left bank, 645 m a.s.l., 35°17'24"N 62°20'58"E, 12.04.2002, A.V. Gromov coll. (ZMMU). UZBEKISTAN: 1♂, 1♀, Navoiy (=Navoi) Viloyati (Province), Kyzylkum Desert, near Gazli, 21.05.1994 (S.V. Ovtchinnikov coll.) (ZMMU); 1♀, Buxoro (=Bukhara) Province, Kyzylkum Desert, near Gazli, 3.05.1998, S.V. Ovtchinnikov coll. (ZMMU); 6♀, 2 juv., Buxoro Province, Yagzakkum Sands, ca 7 km S of Nayumetan, 39°37'30"N 64°23'30"E, 20.04.2002, A.V. Gromov coll. (ZMMU).

Etymology. The species name is a patronym honoring our late colleague and friend Maris Šternbergs (1940-1996), of Riga, Latvia, the only Latvian araneologist of his generation, who also instructed VF in spider studies during his visit to Badghyz (Turkmenistan) in April 1977.

Diagnosis. *Hersiliola sternbergsi* sp. n. is most similar to *H. simoni*, from which it can be distinguished by a longer terminal portion of the cymbium, thicker seminal ducts, lower position of the tegular ridge, and position of the base of the embolus (at almost 12 hrs). Females of *H. sternbergsi* sp. n. differ by a wider septum, thicker lateral arms, and only one coil of the insemination duct around the fertilization duct. The epigyne of *H. sternbergsi* sp. n. is also similar to that of *H. afghanica.* These two species have an almost identical septum shape, but in *H. sternbergsi* sp. n. the epigyne is smaller in size, has smaller spermathecae, and fertilization ducts terminating on the ventral wall of the spermatheca (on the dorsal wall in *H. afghanica*).

Description. Male. Total length 4.6-5.4. Carapace 1.85 long, 2.0 wide, femur I 3.5, femur I/carapace length ratio 1.89. Colouration as in female. Palp as in Figs 3.2, 4.3, 5.3, 6.4-5, tip of cymbium as long as height of tegulum; seminal duct thick; embolus filiform, makes one coil (360°); embolus base located at 11-11:30 hrs; tegular apophysis located almost at the center of the tegulum.

Female. Total length 5.0-5.2. Carapace 1.6-1.95 long, 1.8-2.05 (wider than long), femur I 2.5-2.85, femur I/carapace length ratio 1.46-1.56. Pattern distinct, composed by wide dark marginal bands, radial spots, transverse spot on median grove and V-

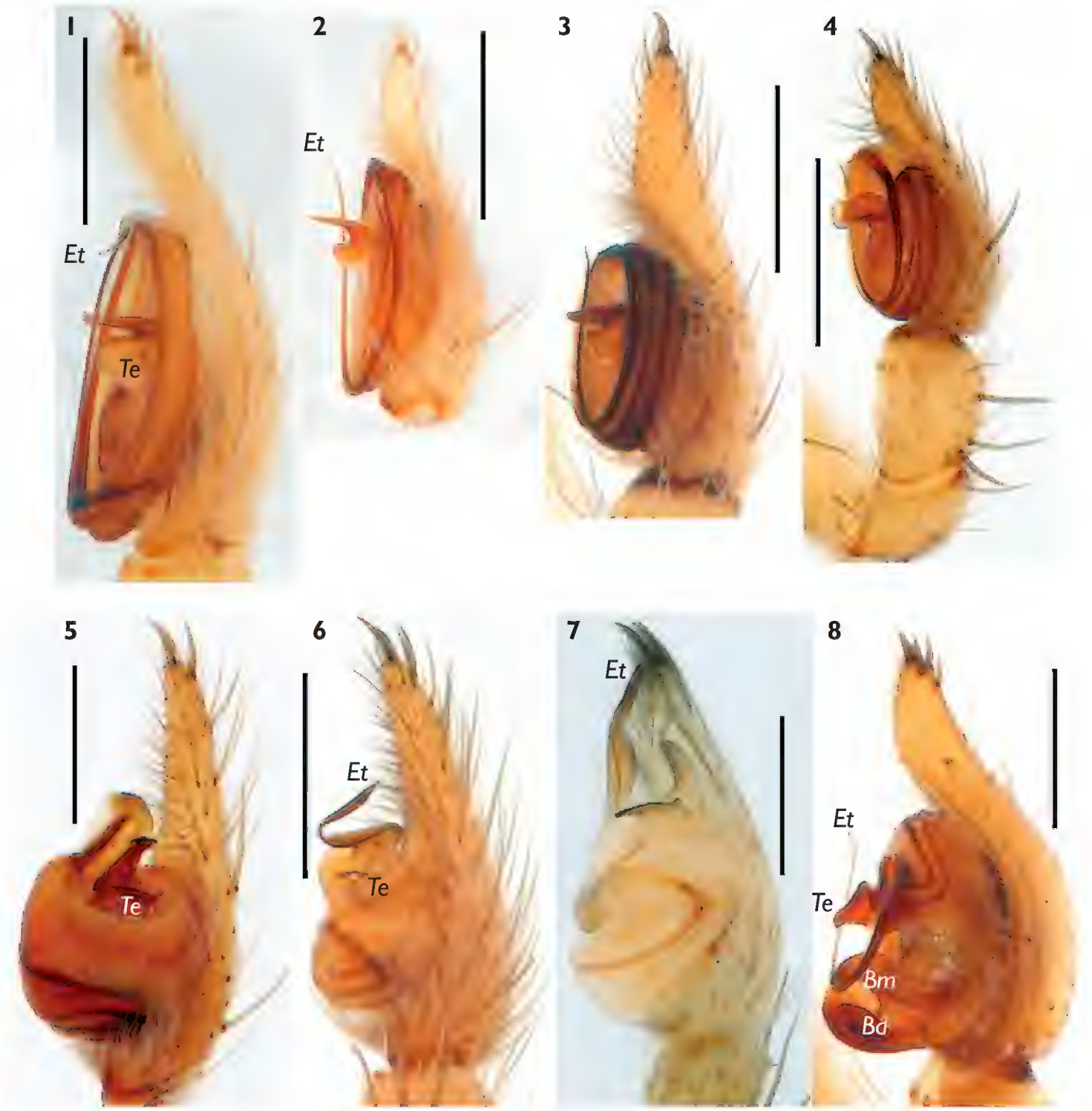

Figure 4. Retrolateral view of the male palp of *Hersiliola macullulata* (**1**), *H. simoni* (**2**), *H. sternbergsi* sp. n. (**3**), *H. esyunini* sp. n. (**4**), *Duninia baehrae* sp. n. (**5**), *Deltshevia danovi* sp. n. (**6**), *D. gromovi* sp. n. (**7**), and *Ovtsharenkoia pallida* (**8**). Scale = 0.5 mm.

shaped mark behind eyes. Abdomen with a heart spot and four pairs of transverse bands. The upper transverse band originates from the heart spot. Sides of abdomen with dark spots. Epigyne as in Figs 7.7-9, 8.2, with a distinct median plate and windows, proportions of median plate and windows variable; insemination duct makes one coil around fertilization duct; insemination duct terminates on ventral side of the spermatheca.

Comments. This species has been collected widely in the lowland deserts of Central Asia (Turkmenistan and Uzbekistan), but constantly misidentified (and misspelled) as "*H. maculata*" or *H. pallida.* Spassky (1952), who did not list "*H. maculata*", men-

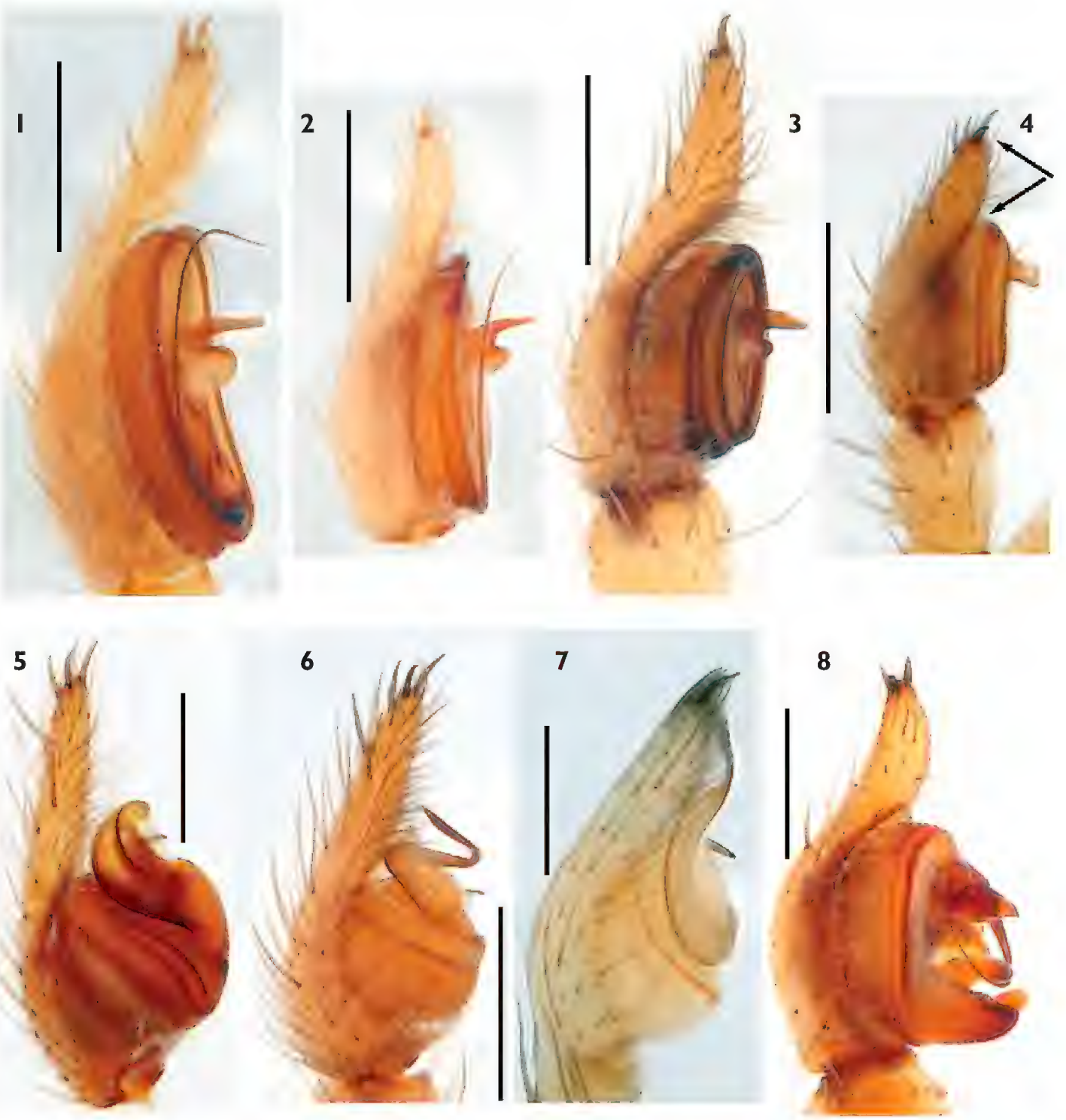

Figure 5. Prolateral view of the male palp of *Hersiliola macullulata* (**1**), *H. simoni* (**2**), *H. sternbergsi* sp. n. (**3**), *H. esyunini* sp. n. (**4**), *Duninia baehrae* sp. n. (**5**), *Deltshevia danovi* sp. n. (**6**), *D. gromovi* sp. n. (**7**), and *Ovtsharenkoia pallida* (**8**). Scale = 0.5 mm.

tioned a wide distribution of "*H. pallida*" in the Turanian Zoogeographical Province, thus obviously assuming this name for the population from Ashgabat identified by Vlassov and Sytchevskaya (1937) as "*H. maculata*". Our study shows that this lowland desert Central Asian taxon is a new species, different from *H. macullulata* (see above on *H. macullulata*).

Hersiliola sternbergsi sp. n. is widespread in lowland Turkmenistan on various types of desert substrates from clay and gypsum to sand. Krivokhatsky and Fet (1982) provide details on its phenology and ecology as a bothrophile in rodent burrows in the sand desert of East Karakum (Repetek Reserve), where it was most numerous in the entrances of burrows of the gerbil, *Rhombomys opimus* Licht. In Repetek, adult females of *H.*

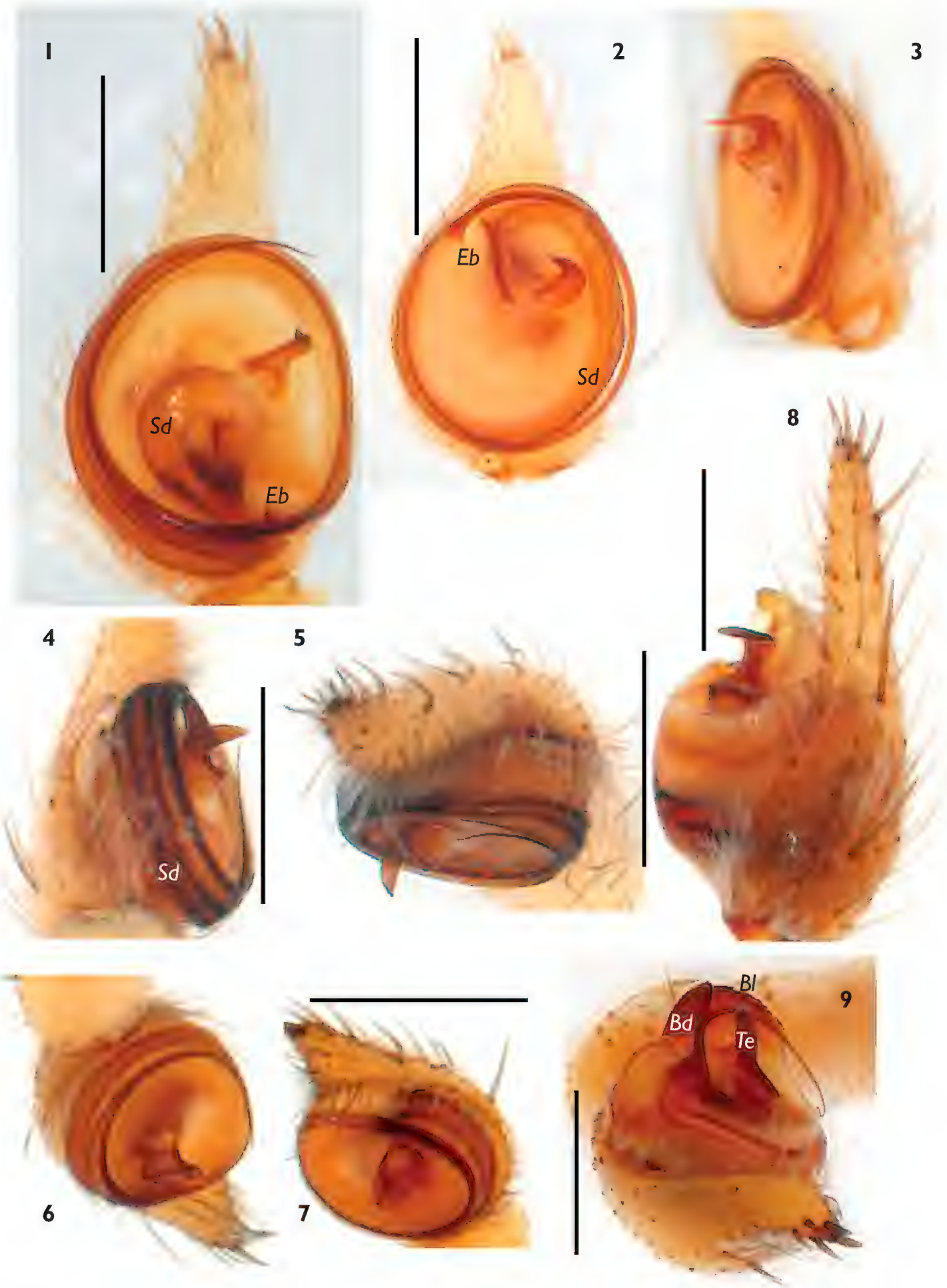

Figure 6. Male palp of *Hersiliola macullulata* (**1**), *H. simoni* (**2-3**), *H. sternbergsi* sp. n. (**4-5**), *H. esyunini* sp. n. (**6-7**), *Duninia baehrae* sp. n. (**8**), and *Ovtsharenkoia pallida* (**9**). **1-2** ventral **3-4**, **6** from below **5**, **7**, **9** from above **8** retrolateral. Scale = 0.5 mm.

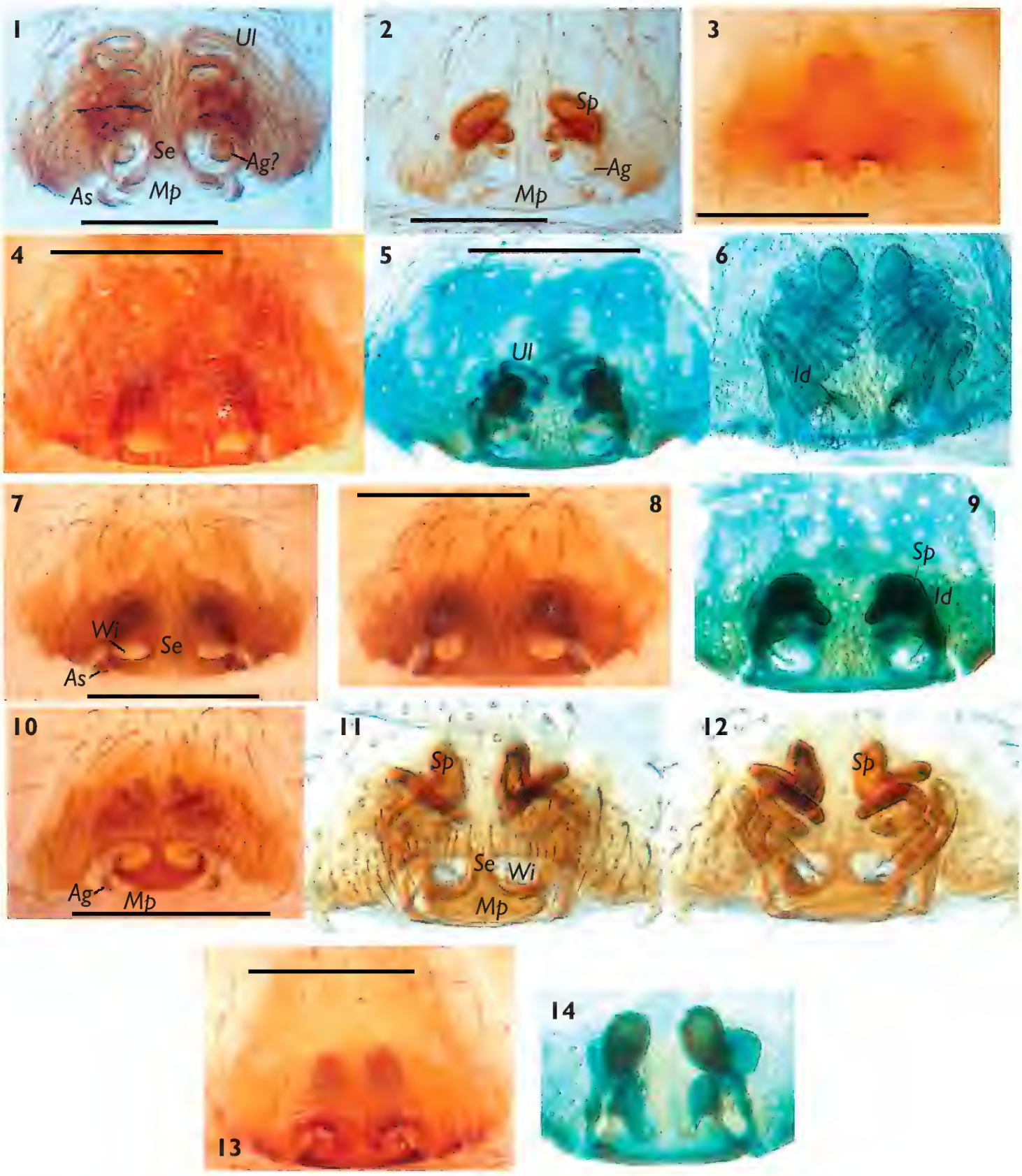

Figure 7. Epigynes of *Hersiliola versicolor* (**1**), *Hersiliola* sp. (**2**), *H. lindbergi* sp. n. (**3**, **6**), *H. afghanica* (**4-5**), *H. sternbergsi* sp. n. (**7-9**), *H. esyunini* sp. n. (**10-12**), and *H. foordi* sp. n. (**13-14**). **1-8**, **10-11**, **13-14** ventral **9**, **12** dorsal. Scale = 0.5 mm.

sternbergsi sp. n. were recorded from November to May, and adult males, from December to April, indicating a winter-spring mating period. Spiders were active in daytime.

Distribution. Turkmenistan (lowland deserts from the Caspian Sea to Amudarya Valley), Uzbekistan (west, Kizylkum Desert).

***Hersiliola esyunini* sp. n.**
urn:lsid:zoobank.org:act:406712E1-0BAC-4D22-816B-81D968015358
Figs 1.2, 2.2, 3.1, 4.4, 5.4, 6.6-7, 7.10-12, 8.4

H. xinjiangensis (in part): Marusik 2009: 153-156, f. 1-2, 4-13 (♂♀). Misidentification.

Type material. Holotype: ♂ together with paratypes 1♂ and 2♀ (ZMMU) from UZBEKISTAN: Namangan Province, Pap District, SE foothills of Kurama Mountains, ca. 5-5.5 km NW of Khanabad, ca. 850 m a.s.l., 40°54'05"N 70°45'44"E, 16.05.2002, A.V. Gromov coll.; paratype 1♂, Namangan Province, Pap District, SE foothills of Kurama Mountains, ca. 5.5 km NW of Khanabad, ca. 380 m a.s.l., under stones, 40°54'15"N 70°45'29"E, 15.05.2002, A.V. Gromov coll. (SMF).

Etymology. The species name is a patronym honoring our friend and colleague Sergei Esyunin of Perm, Russia.

Diagnosis. *H. esyunini* sp. n. is closely related to *H. xinjiangenis*, from which it can be distinguished by its smaller size, differently shaped tegular apophysis and the median plate of the epigyne. From all congeners *H. esyunini* sp. n. can be easily distin-

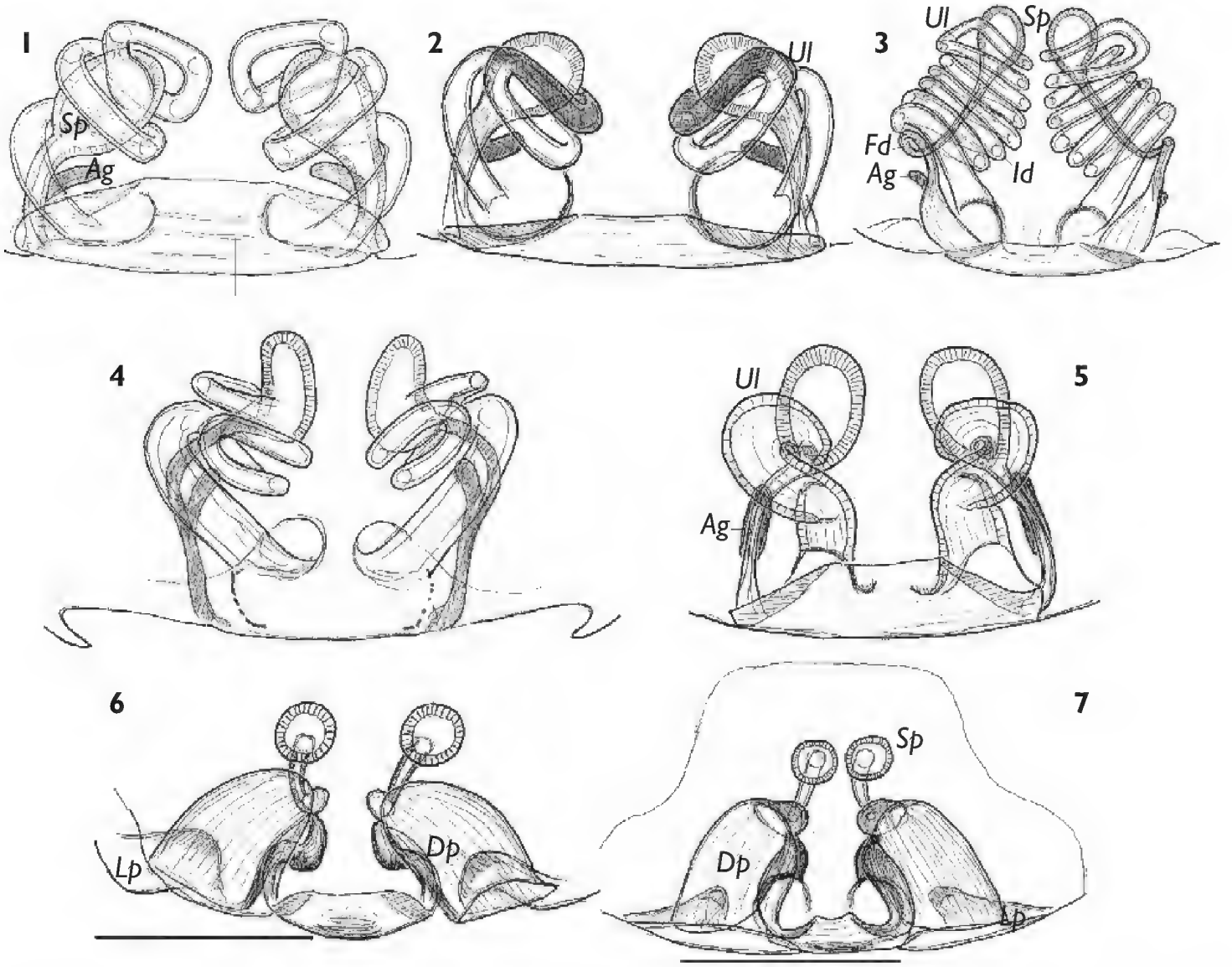

Figure 8. Epigynes, ventral view, of *Hersiliola afghanica* (**1**), *H. sternbergsi* sp. n. (**2**), *H. lindbergi* sp. n. (**3**), *H. esyunini* sp. n. (**4**), *H. foordi* sp. n (**5**), *Duninia baehrae* sp. n. (**6**), and *D. rheimsae* sp. n. (**7**).

guished by a relatively shorter tip of the cymbium, undivided tegular apophysis and a median plate of the epigyne with turned up lateral edges of the median plate.

Description. Male. Total length 3.4-3.65. Carapace 1.4-1.5 long, 1.5-1.6 wide, femur I 3.0-3.1 long, femur/carapace length ratio 2.1-2.14. Body yellow-light brown with pattern formed by brown hairs and spots. Carapace with brownish eye area and posterior cephalic part, and brown vertical stripe on clypeus (Figs 1.2, 2.2). Margins of carapace brown. Abdomen with indistinct pattern. Legs with broad, dark annulations, dark rings wider than light ones. Femur I almost entirely dark. Coxae IV separated by one diameter. Palp as in Figs 3.1, 4.4, 5.4, 6.6-7, with femur, patella+tibia and cymbium subequal in length, tibia in terminal part slightly wider than femur. Tegulum discoid, with long filiform embolus and tegular apophysis. Embolus starts at about 01 hrs, makes a loop of more than 270° and terminates around 10 hrs. Tegular apophysis perpendicular to tegulum. Apical part of the bulb slightly flattened (embolus straight, not rounded).

Female. Total length 3.75-4.0. Carapace 1.4-1.5 long, 1.5-1.6 wide, femur I 2.25-2.5 long, femur/carapace length ratio 1.6. Colouration as in female. Epigyne as in Figs 7.10-12, 8.4. Median plate anchor-like, with a pair of small accessory sclerites on the side that visually makes the basal part wider; spermathecae and seminal duct translucent through the integument. Accessory gland digitiform.

Comments. Earlier, Marusik (2009) confused this species with the related *H. xinjiangensis* due to the similarity of their male palps, i.e. same shape of the apical part of the tegulum (character unknown in other *Hersiliola* species), same position of the embolic tip, and same shape of the tegular apophysis. Misidentification was made before we started this revision of East Palaearctic *Hersiliola*.

Distribution. The species is known only from two nearby localities in eastern Uzbekistan.

Hersiliola xinjiangensis (Liang & Wang, 1989)

Figs 13.1-4

Hersilia Xinjiangensis Liang and Wang, 1989: 56, f. 1-4 (D♂♀).
Hersilia x.: Hu and Wu 1989: 78, f. 55.5-8 (♂♀, same figs as in Liang and Wang 1989).
Hersilia x.: Song et al. 1999: 80, f. 32O-P, 33F-G (♂♀, same figs as in Liang and Wang 1989).
H. x. (in part): Marusik 2009: f. 3a-d (T♂♀, same figs as in Liang and Wang 1989).

Type material: 2♂, 2♀, CHINA: Xinjiang, Urumchi, not seen, apparently lost (see below).

Diagnosis. This species can be easily distinguished from all congeners, except for *H. esyunini* sp. n., by a relatively shorter tip of the cymbium, flattened apical part of the tegulum, and undivided tegular apophysis. From the sibling species *H. esyunini* sp. n., *H. xinjiangensis* can be distinguished by its larger size, different shape of the tegular apophysis and median plate of the epigyne.

Description (translated from original description). "Female. Total length 5.8, body flat. Cephalic part of carapace swollen, the position of PME highest. Cervical

groove deep. Thorax low and flat. Eye area brown, 8 eyes in 2 rows. Both AER, PER curved, AER curved stronger than PER. ALE white, others 6 eyes black, AME largest, located in the front of head; ALE small, located below in front of PLE. 4 eyes of PER near same size. Chelicera small, yellowish brown, with one promarginal tooth and no retromarginal. Pedipalps and legs yellowish brown, each segments of pedipalps and legs with blackish brown annuli in the median and the distal. Tarsus with 3 claws. Upper claw with a single tooth. Leg formula 2143. Opisthosoma dorsally with yellowish brown scales and grayish brown spots. Heart spot black, with three pairs of muscular depressions. The venter yellow, without marking. Anterior spinnerets robust, their distal segment small. Median spinnerets thin, nearly the same length as anterior ones. Rear spinnerets located on the sides of median ones. The distal segment same length as opisthosoma, smaller than the basal one. Colulus present. Epigyne brown, septum inverse T-shaped.

Male. Total length 5.00. Habitus, colour and markings style as in female.

This species inhabits crevices and holes of walls. It is a common species. Its colouration is cryptic and therefore it is not easy to find specimens."

Comments. Type specimens (2♂, 2♀) were supposedly deposited in the Department of Plant Protection, Xinjiang August 1st Agricultural College, Urumqi, Xinjiang, China (Liang and Wang 1989). At our request, Shuqiang Li tried to find these types but failed. It seems that after the retirement of Tie Liang these specimens were lost or transferred. The embolus base was not depicted by Liang and Wang (1989). Judging from the conformation of the epigyne in its sibling, *H. esyunini* sp. n., it is likely that median plate of the epigyne and vulva (endogyne) have been somewhat misinterpreted.

Distribution. *H. xinjiangensis* is known only from central Xinjiang (China). It is the northernmost species of the genus and of the entire family Hersiliidae. In Europe (Iberian Peninsula), the northernmost locality of *Tama edwardsi* (Lucas, 1846) (Ribera et al. 1988) is in northeastern Portugal ca. 41°N, while the type locality of *H. xinjiangensis* lies north of 44°N.

***Duninia* gen. n.**

urn:lsid:zoobank.org:act:64FD3C91-A822-42B1-9779-592D9D3EF7E2

Type species. *Duninia baehrae* sp. n.

Etymology. The genus name is a patronym honoring our late colleague, friend, and a prominent araneologist Pyotr Dunin (1952-1998) who lived and worked in Baku (Azerbaijan) and Togliatti (Russia). Gender: feminine.

Diagnosis. *Duninia* gen. n. can be easily distinguished from other genera of Hersiliidae by its globular tegulum, thick seminal duct, non-screw-shaped embolus that is thicker than the tegular apophysis, round spermathecae, and a heavily sclerotized copulatory opening below the epigynal plate. A globular tegulum is also present in the Central Asian genus *Deltshevia* gen. n., but this genus has a screw-shaped embolus and a thinner tegular apophysis. Females of *Ovtsharenkoia pallida* also seem to have

copulatory openings below the epigynal plate, but they are not heavily sclerotized as in *Duninia* gen. n.; also, *O. pallida* does not have round spermathecae.

Description. Body length ca. 5 mm, carapace as long as wide from 1.75 to 2.25. Pattern as in *Hersiliola*. Palp cymbium with a long tip, tegulum globular, seminal duct wide, embolus wide and not screw-shaped, tegular apophysis claw-like, with its claw part thinner than embolus. Epigynal plate with a septum-like structure, but without windows and openings, median plate without distinct margins. Copulatory opening is located below the epigynal plate in an epigastral fold; spermathecae round, coiled ducts absent.

Comments. Conformation of the epigyne in this genus is, in some respects, unique among entelegyne spiders. The epigynal plate has no openings (furrows or fovea) but possesses two pairs of fovea on the vertical posterior wall located inside the epigastral fold. The lateral pair of fovea is shallow and elongate. Another pair of fovea is closer to the median part and located deeper; they have a more heavily sclerotized wall and are very deep. It seems that these deep pockets have copulatory openings inside the anterior part. Lateral pockets seem to match the tegular apophysis of the male.

There are few taxa among entelegyne spiders that have a copulatory opening on the posterior vertical wall of the epigyne located in the epigastral fold. Besides some Erigoninae, we know of only one such genus, *Paratus* (Liocranidae) (cf. Marusik et al. 2008). *Paratus* has epigynal plate without furrows and fovea, and a small fovea hidden in the epigastral wall that leads to two closely separated copulatory openings.

The male palp of *Duninia* gen. n. is unique among Hersiliidae because of its short, broad embolus and tegular apophysis extended along the cymbial axis.

Distinguishing characters. Two species of *Duninia* gen. n. can be easily distinguished by the shape of the copulatory organs.

Composition and distribution. *Duninia* gen. n. includes two species: *D. baehrae* sp. n. (type species; Turkmenistan) and *D. rheimsae* sp. n. (northern Iran, Tehran Province).

***Duninia baehrae* sp. n.**

urn:lsid:zoobank.org:act:1DD0B4E4-BFD2-4E35-B05C-BDC1EF3A9923

Figs 3.3, 4.5, 5.5, 6.8, 8.6, 11.1-4

Hersiliola pallida: Ovtsharenko and Fet 1980: 443 (Turkmenistan: Badghyz). Misidentification.

Hersiliola afghanica: Fet 1983: 837 (in part; Turkmenistan: Kopetdagh; see also *Deltshevia danovi* sp. n.); Kuznetsov and Fet 1984: 52 (Turkmenistan: Central Kopetdagh); Mikhailov and Fet 1994: 504. Misidentification.

Hersiliola afghana: Fet 1984: 259 (misspelling). Misidentification.

Type material (6 specimens): Holotype: ♂ (ZMMU), TURKMENISTAN: Ahal Province, Central Kopetdagh, Kopetdagh State Reserve, Kurkulab, 7-24.05.1978, G.T. Kuznetsov coll. Paratypes: TURKMENISTAN: 1♀, Ahal Province, Central Kopetdagh, Gaudan, 26-27.07.1895, O. von Rosen coll. (ZMMU, Ta-4009); 1♂, Ahal Province,

Central Kopetdagh, Kopetdagh State Reserve, Bolshie Katranki, 9-16.09.1978, G.T. Kuznetsov coll. (SMF); 1♀, Mary Province, Serhetabad (=Kushka) District, Morgunovka, 29.06.1975, V. Fet coll. (SMF); 2♀, Balkan Province, Bolshoi Balkhan Mts., 6 km from Nebit-Dagh (now Balkanabat), 4.04.1993, S.V.Ovtchinnikov coll. (ZMMU).

Etymology. The species name is a patronym honoring our colleague Barbara Baehr (Brisbane, Australia), for her contributions to in-depth modern studies of Hersiliidae.

Diagnosis. From its sibling *D. rheimsae* sp. n., females can be easily distinguished by a larger body and epigyne, diverging spermathecae, and deep pockets longer than the lateral ones.

Description. Male (holotype from Kurkulab, abdomen and most of legs are missing): Carapace 2.12 long, 2.25 wide, femur I 5.0 long, leg I/carapace length ratio 2.36. Palp as in Figs 3.3, 4.5, 5.5, 6.8, bulbus globular, basal portion of seminal duct thick; embolus very massive, flat and short, twice shorter than the apical portion of the cymbium, opening large and clearly visible, tegular apophysis claw-like, large, located on the apical part of tegulum, extends parallel to cymbial axis, its terminal part much thinner than embolus.

Female: epigyne as in Figs 8.6, 11.1-4, lacks windows and distinct openings; median plate twice as wide as high; translucent spermathecae round, separated from median plate by more than one diameter; lateral sides of epigynal plates with "arches" clearly visible on dissected epigyne; vulva with two round spermathecae separated by one diameter and large lateral wings. Lateral arches lead to small pockets, and large wings correspond to large and deep pocket that seems to correspond to copulatory opening. It is not clear which structures of the vulva correspond to fertilization ducts, and also not clear whether the fertilization duct has accessory glands.

Comments. Kuznetsov and Fet (1984: 52) recorded this species (as *Hersiliola afghanica*) for several localities in Central Kopetdagh (Turkmenistan, bordering with Iran) within the territory of Kopetdagh State Reserve as well as its office in Berzengi, suburb of Ashgabat. These records were based on six specimens, all captured in pitfall traps by Gennady Kuznetsov. In addition to Kurkulab, and B[olshie] Katranki localities (see labels above), Kuznetsov and Fet (1984) listed two specimens from Berzengi (05-06.1980, 1♀) and M[alyi] Dashtoi (22-29.07.1981, 1♂). Three reported localities within the Kopetdagh State Reserve lie at 900-2000 m a s.l (Kurkulab, 900-1000 m; Bolshie Katranki and Malyi Dashtoi, 1500-2000 m) (G. T. Kuznetsov. pers. comm. 2008). An additional, previously unpublished, specimen from Gaudan (ZMMU) was collected by an early local naturalist, Baron O. von Rosen, in 1895. The species undoubtedly will be found in neighboring northeastern Iran (Khorassan Province) and northern Afghanistan. It is an element of the not yet fully explored mountainous fauna of the Turkmeno-Khorassan region, a transitional zoogeographic area between the western mountains of the Mediterranean / Iran and eastern mountains of Central Asia / Himalayas (Fet 1994). This area consistently yields interesting new spider taxa such as e.g. *Paracedicus gennadii* (Fet, 1993), *P. ephthalitus* (Fet, 1993) (Desidae), *Synaphris orientalis* Marusik & Lehtinen, 2003 (Synaphridae), or a hersiliid *Deltshevia danovi* gen. n. sp. n. (see below).

Distribution. Turkmenistan (Bolshoi Balkhan, Central Kopetdagh, Badghyz).

***Duninia rheimsae* sp. n.**
urn:lsid:zoobank.org:act:1B60CF32-E7DF-483D-9575-9EF514922FDE
Figs 8.7, 11.5-7

Type material: Holotype subadult ♀ with a well-developed epigyne and paratypes 3 juvenile specimens: IRAN [25], Tehran Province, ca. 80 km E of Tehran, Damavand District, Aroo Village, 52°27'E 35°40'N, 15.06.2000, Yu.M. Marusik coll. (ZMMU).

Etymology. The species name is a patronym honoring our colleague Cristina A. Rheims (São Paulo, Brazil), for her contributions to in-depth modern studies of Hersiliidae.

Description. Male unknown. Female: Total length 5.0. Carapace 1.75 long, 1.85 wide, femur 2.15 long, femur I/carapace length ratio 1.23. Epigyne as in Figs 8.7, 11.5-7, with a sort of septum on the median plate, spermathecae converging and almost touching each other, epigynal pockets subparallel, with hemispherical terminal part. Lateral pockets long, appear longer than their depth.

Diagnosis. *D. rheimsae* sp. n. can be distinguished from the sibling species *D. baehrae* sp. n. by its smaller body and epigyne size, converging spermathecae, and less slanting epigynal pockets bearing large, clearly visible hemispheres.

Comments. Judging from the conformation of the male palp and epigyne in its sibling *D. baehrae* sp. n. and conformation of the epigyne in *D. rheimsae* sp. n., it is reasonable to suggest that male of this species should have a smaller embolus (matching a small, deep pocket of *D. rheimsae* sp. n.) and a larger tegular apophysis.

Distribution. Known only from type locality in northern Iran.

***Deltshevia* gen. n.**
urn:lsid:zoobank.org:act:44D11CBC-5310-4DC0-A3C8-67F27C7A247D

Type species. *Deltshevia danovi* sp. n.

Etymology. The genus name is a patronym honoring our colleague, friend, and a prominent araneologist, Christo Deltshev of Sofia, Bulgaria. We are especially glad to dedicate this genus to Christo on the occasion of his 70th birthday. Gender: feminine.

Diagnosis. *Deltshevia* gen. n. differs from other genera of Hersiliidae by a globular tegulum; thick and screw-shaped embolus with a tapering, sharp tip; large two-armed tegular apophysis extended upward; large epigyne openings; and thick copulatory ducts.

Comments. A globular tegulum and tegular apophysis extended upward are also found in *Duninia* gen. n. In the latter genus, however, the tegular apophysis has one claw-like arm; this arm is thinner than the embolus and is extended upward (along the cymbial axis). In *Deltshevia* gen. n., the tegular apophysis has two arms: an upper arm directed upward, and a claw-like arm perpendicular to the cymbial axis. Females of this genus can be easily recognized by the presence of a (real) septum, large copulatory openings, and a wide (wider than spermathecae) and uncoiled insemination duct. Septum and small copulatory openings are present also in *Hersiliola*, but insemination ducts in this genus are always coiled and thinner than the spermathecae, or subequal in width to the spermathecae.

Description. Small hersiliids 5-7 mm long, with carapace 2.1-2.7 long and wide. Palp globular; embolus thick and screw-shaped; tegular apophysis large, with two arms: a massive vertical arm and a small horizontal arm. Epigyne with large copulatory openings; wide insemination ducts; septum and median plate distinct; spermathecae oval; fertilization duct short; accessory gland globular.

Distinguishing characters. The two species of *Deltshevia* gen. n. can be easily distinguished by the shape of copulatory organs.

Composition and distribution. *Deltshevia* gen. n. includes two species: *D. danovi* sp. n. (type species; Turkmenistan and Kazakhstan) and *D. gromovi* sp. n. (eastern Uzbekistan).

***Deltshevia danovi* sp. n.**

urn:lsid:zoobank.org:act:47699594-B924-4F00-8435-D0200734C1C2

Figs 3.4, 4.6, 5.6, 9.1-5, 10.1-3

Hersiliola afghanica: Fet 1983: 837 (Turkmenistan: SW Kopetdagh). Misidentification.

Hersiliola danovi: Fet 1985: 72 (*nomen nudum*; no description published).

Hersiliola sp. 1: Mikhailov and Fet 1994: 504.

Type material (31 specimens): Holotype: ♂ (ZMMU) and paratypes 3♀, 1 juv.♀ (ZMMU), 3♀ (SMF), TURKMENISTAN: Balkan Province, Southwest Kopetdagh, Syunt-Khasardagh Reserve, N of Mt. Syunt, Damdam, 1000 m a.s.l., 8.07.1984, V. Fet coll.

Paratypes. TURKMENISTAN: Balkan Province, Southwest Kopetdagh, Garrygala (=Kara-Kala), Parkhai, 400 m a.s.l., 2 juv.♀, 08.1983; 1♀, 7.06.1984, V. Fet coll. (ZMMU); Balkan Province, Southwest Kopetdagh, Hodzhagala, 400 m a.s.l., under stones, 1 subad.♀, 05.1981, N. Yermakov coll. (ZMMU), 1♂, 11.05.1984, V. Fet coll. (SMF), 4 subad.♀, 11.05.1984, 2 subad.♂, 3 subad.♀, 4.06.1984, V. Fet coll. (ZMMU); Balkan Province, Gyzylarbat (=Kyzyl-Arvat), 12.05.1984, 2♀, 1 juv.♂, V. Fet coll. (ZMMU). KAZAKHSTAN: 3♂, 3♀, Atyrau (=Guryev) Province, Ustyurt Reserve, W of Baskorgan, 27.05.1989, Raikhanov and Ibrayev coll. (ZMMU).

Etymology. The species name is a patronym honoring the late Rostislav Danov (1941-1993) of St. Petersburg, Russia, a naturalist, snake hunter, and artist, a friend of VF and his family, who spent many years working in Southwest Kopetdagh.

Diagnosis. *Deltshevia danovi* sp. n. is similar to *D. gromovi* sp. n., from which it can be easily distinguished by the shape of the embolus, tegular apophysis and epigyne. *Deltshevia gromovi* sp.n has a shorter and screw-shaped embolus, while *D. danovi* sp. n. has a longer, non-screw-shaped embolus. The apical portion of the tegular apophysis in *D. gromovi* sp. n. has subparallel margins, while the apical portion of the tegular apophysis in *D. danovi* sp. n. is triangular, with slanting margins. The epigyne of *D.*

Figure 9. Somatic characters of *Deltshevia danovi* sp. n. (**1-5**), and *D. gromovi* sp. n. (**6-7**). **1**, **7** female carapace, dorsal **2-3** abdomen of female, ventral and dorsal respectively **4-5** male carapace, frontal and lateral, respectively **6** female habitus.

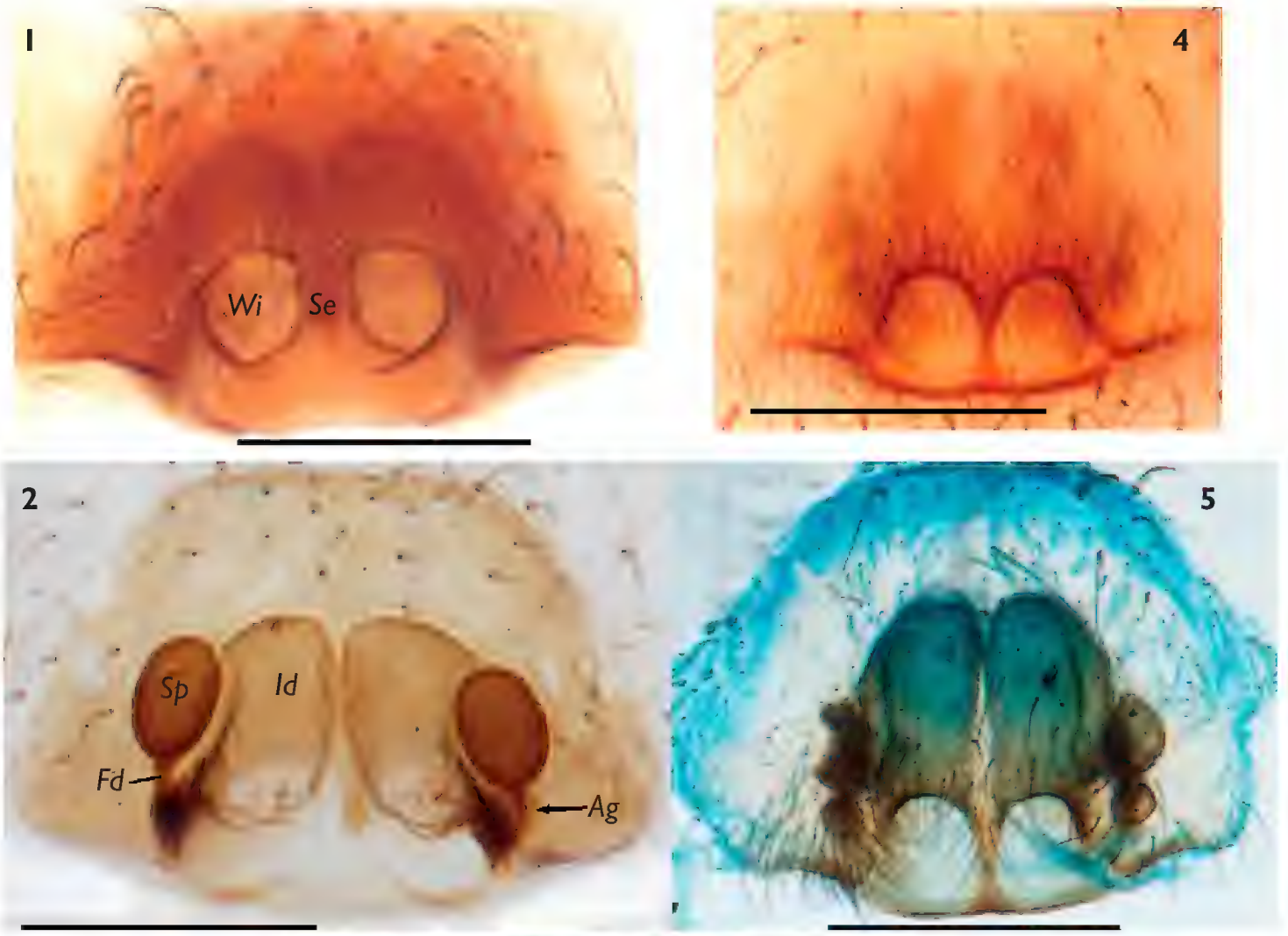

Figure 10. Epigynes of *Deltshevia danovi* sp. n. (**1-3**), and *D. gromovi* sp. n. (**4-5**). **1**, **3-4** ventral **2**, **5** dorsal. Scale = 0.5 mm.

danovi sp. n. has round openings (bell-shaped in *D. gromovi* sp. n.), a wider septum than in *D. gromovi* sp. n., a higher median plate, and larger spermathecae.

Description. Male. Total length 5.0. Carapace 2.4 long, 2.7 wide. Eyes, AME 0.11, ALE 0.17, PME 0.08, PLE 0.14, AME–AME 0.11, AME–ALE 0.07, ALE–PLE 0.03, PME–PLE 0.17, PME–PME 0.11. Carapace pattern and eye arrangement as in Fig. 9.1. Palp as in Figs 3.4, 4.6, 5.6, femur as long as cymbium, patella+tibia length about 2/3 of cymbium or femur length; bulbus globular, seminal duct thin; embolus thick, long and screw-shaped, terminal portion tapering, tip sharply pointed; tegular apophysis massive, with two arms: a large membranous apical arm, and a bill-shaped retrolateral arm.

Female. Total length 6.0-7.0. Carapace 2.1-2.3 long, 2.4-2.5 wide (wider than long). Carapace pattern and eye arrangement as in Figs 9.4-5. Abdominal pattern as in Fig. 9.3, dorsal side with a dark heart band and four transverse stripes, sides of abdomen with dark spots, venter without pattern. Epigynal plate 1.00-1.14 wide, fovea 0.47-0.57 wide, plate/fovea ratio 2-2.1. Epigyne as in Figs 10.1-3, with distinct windows, well-separated septum, median plate anchor-like, epigynal opening distinct (with well-expressed borders), opening diameter larger than septum width and equal to median plate height; translucent spermathecae elongate and located aside of openings. Vulva simple, with large pockets (continuation of epigynal opening), with oval spermathecae separated by more than three times their widths; insemination duct short, accessory gland globular, poorly visible.

Distribution. Turkmenistan (southwest), Kazakhstan (southwest).

***Deltshevia gromovi* sp. n.**

urn:lsid:zoobank.org:act:D7FA30A6-E286-4A5A-9C33-D799D815E437

Figs 3.5, 4.7, 5.7, 9.6-7, 10.4-5

Hersiliola macullulata: Zyuzin et al. 1994: 6 (Kazakhstan). Misidentification.

Note: Much new material from Central Asia reached us, due to the efforts of Alexander Gromov and Dmitri Logunov, when this paper was already finalized; therefore the following description and figures of a male are based on a subadult with well-developed palp.

Type material (49 specimens): Holotype: ♀ and paratype subadult ♂ (with well-developed palp) (ZMMU), UZBEKISTAN: Surkhandarya Province, Kattakum Sands, ca. 4 km NE of Uchkyzyl, ca. 330 m a.s.l., 37°22'33"N 67°16'38"E, 27.04.2002, A.V. Gromov coll.

Paratypes. UZBEKISTAN: 1♀ Uzbekistan, Surkhardarya Province, Uzun District, Babatagh Mt. Range, environs of Akmechet' 12-20.04.1994, O. Lyakhov coll. (ZMMU); 4 ♂, 4♀ (SMF), 4♂, 3♀, 3juv (ZMMU), Uzbekistan, Surkhardarya Province, Babatagh Mt. Range, 25.04.1994, S.V. Ovtchinnikov coll.; 3♀, 3♀, Surkhardarya Province, Uzun District, E slope of Babatagh Mt. Range, ca 5.5 km WSW of Akmechet', 38°01'34"N 68°15'22"E, 696 m, 3.05.2002, A.V. Gromov coll. (ZMMU); 1♀, Surkhardarya Province, Uzun District, E slope of Babatagh Mt. Range, ca 5.5 km WSW of Akmechet', 38°01'42"N 68°14'48"E, 766 m, 4.05.2002, A.V. Gromov coll. (ZMMU); 1♀, Surkhardarya Province, Uzun District, E slope of Babatagh Mt. Range, ca 4.5 km WSW of Akmechet', 38°01'34"N 68°15'22"E, 706 m, 21.05. 2003, A.V. Gromov coll. (ZMMU); 1♀? , Surkhardarya Province, Uzun District, E slope of Babatagh Mt. Range, ca 5 km WSW of Akmechet', 38°01'20"N 68°15'08"E, 769 m, 23.05.2003, A.V. Gromov coll. (ZMMU); 1♂, 1♀, Surkhardarya Province, Uzun District, E slope of Babatagh Mt. Range, ca 4.5 km WSW of Akmechet', 38°01'28"N 68°15'17"E, 700 m, 23.05.2003, A.V. Gromov coll. (ZMMU);

2♂, 2♀, Buxoro (=Bukhara) Province, Gizhduvan District, SW foothills of Karaktau Mt. Range, ca 14.5 km N of Kanimekh, 40°24'51"N 65°08'57"E, 392 m, 5.06.2003, A.V. Gromov coll. (ZMMU); 1♂, 1♀, Navoi Province, Kanimekh District, Kyzylkum Desert, ca 65 km W of Chengel'dy, near Darvazatepa Mt., clay hills, 211 m, 40°57'26"N 64°07'51"E, 4.06.2003, A.V. Gromov coll. (ZMMU); 1♀, Kyzylkum Desert, Kuldzyktau Mt., Dzhengeldy, 22.05.1994, S.V. Ovtchinnikov coll. (ZMMU). KAZAKHSTAN: 2♂, 3♀, South Kazakhstan Province, Chimkent (now Shimkent) District, Kyzylkum Desert, Karaktau Mt. Range, Karamola Mt., 8.06.1989, A.A. Zyuzin coll. (ZMMU); 4♀, Kazakhstan, South Kazakhstan Province, Kyzylkum Desert, Karaktau Mt. Range, Karamola Mt., 29.05.1993, A.A. Zyuzin coll. (ZMMU); 1♀, Kyzylkum Desert, Karamola Mt., 42°14'57.2"N 67°48'21.1"E, 228 m, 3.07.2006, A.V. Gromov coll. (ZMMU).

Etymology. The species name is a patronym honoring its collector, our friend and colleague Alexander V. Gromov of Almaty, Kazakhstan.

Diagnosis. *Deltshevia gromovi* sp. n. is similar to *D. danovi* sp. n., from which it can be easily distinguished by the shape of the embolus, tegular apophysis and epigyne. *Deltshevia gromovi* sp.n has a shorter and screw-shaped embolus, while *D. danovi* sp. n. has a longer, non-screw-shaped embolus. The apical portion of the tegular apophysis in *D. gromovi* sp. n. has subparallel margins, while the apical portion of the tegular apophysis in *D. danovi* sp. n. is triangular, with slanting margins. Openings of the epigyne in *D. gromovi* sp. n. are bell-shaped but not round, copulatory ducts are much longer than in the sibling species, and accessory glands are much larger in comparison to the spermathecae.

Description. Male (subadult, but with well-developed palp). Total length 5.6. Carapace 2.0 long, 2.2 wide, femur I 2.75 long. Carapace with 4 pairs of dark marginal spots, 2 pairs of lateral spots in anterior half and unpaired median spot in thoracic part. Legs with distinct annulations. Palp as in Figs 3.5, 4.7, 5.7, with a long, non-screw-shaped embolus, which almost reaches the cymbium tip; tegular apophysis large, its apical part has almost parallel sides.

Female. Total length 5.0. Carapace 2.1 long, 2.35 wide, femur I 3.25 long, epigynal plate 0.71 wide, fovea 0.36 wide, ratio 0.5. Colouration as in male. Epigyne as in Figs 9.6-7, 10.4-5, with distinct large bell-shaped copulatory openings, thin tapering septum, and thin edge of median plate; openings leads to voluminous copulatory ducts, their height is about three times longer than their diameter and two times longer than height of copulatory openings; spermathecae small, oval; accessory glands globular, large (about half the size of a spermatheca)

Comments. It is possible that in mature males the embolus is screw-shaped, as in *D. danovi* sp. n. The single male that we studied was subadult, and its embolus was straightened being pressed between the cymbium and cuticle. It is possible that after the final molt the embolus would become partially screw-shaped.[1]

Distribution. Uzbekistan, Kazakhstan (south).

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[1] shape of embolus in adult males studied when manuscript was in review is the same as in subadult male.

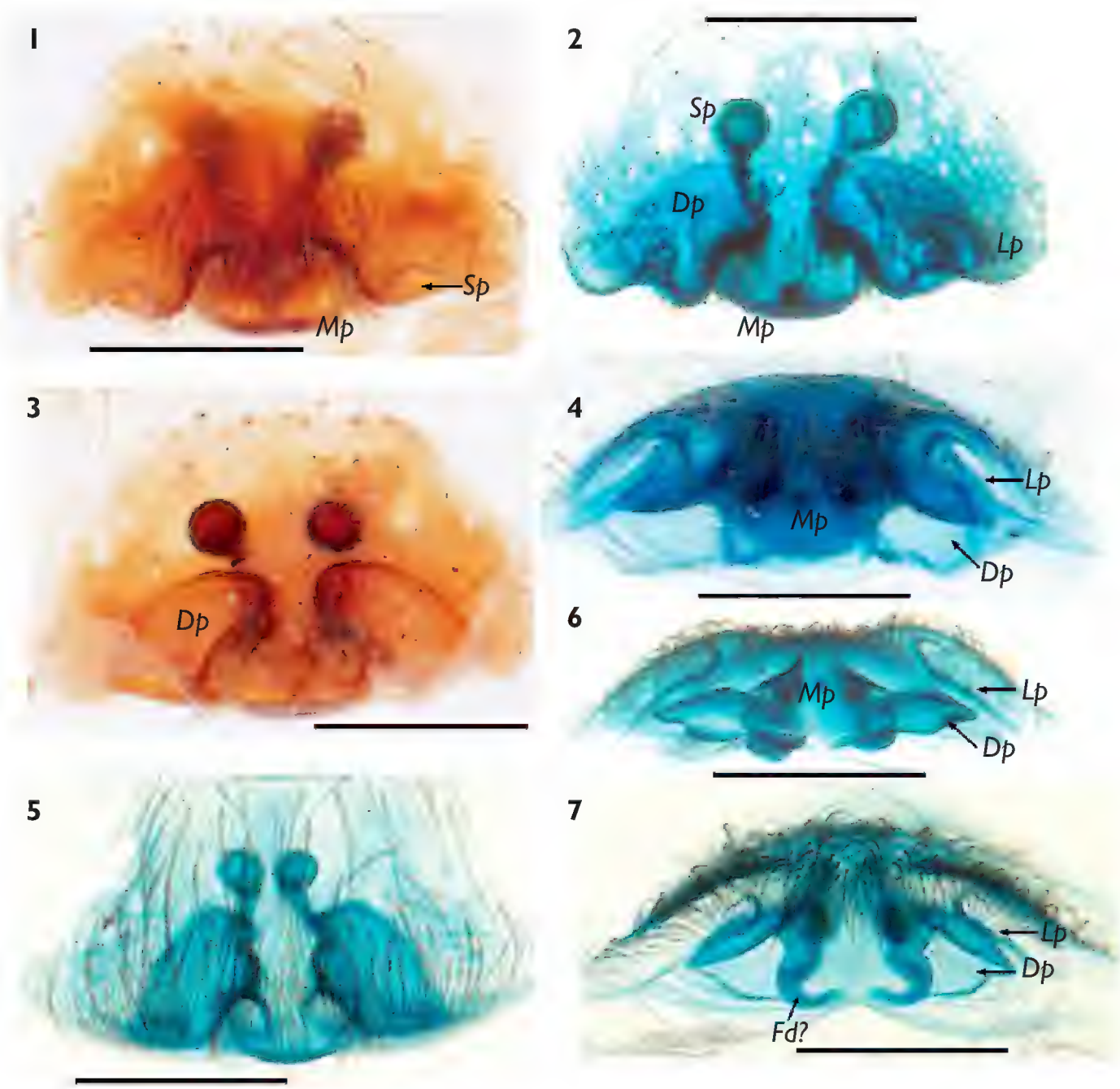


Figure 11. Epigynes of *Duninia baehrae* sp. n. (**1-4**), and *D. rheimsae* sp. n. (**5-7**). **1-2**, **5** ventral **3** dorsal **4**, **6-7** caudal. Scale = 0.5 mm.

***Ovtsharenkoia* gen. n.**

urn:lsid:zoobank.org:act:22EE9CC4-BCC0-4E96-B57C-C84E920297E7

Type species. *Hersiliola pallida* Kroneberg, 1875.

Etymology. The genus name is a patronym honoring our friend and colleague, and a prominent araneologist, Vladimir Ovtsharenko of New York, USA. Gender: feminine.

Diagnosis. *Ovtsharenkoia* gen. n. can be easily distinguished from other genera of Hersiliidae by its short spinnerets and the shape of the copulatory organs. The male palp has a unique conformation for the family due to the presence of a complex outgrowth in the basal part of the tegulum. All other genera similar to *Hersiliola* have only one apophysis (tegular). Females of *Ovtsharenkoia* gen. n. can be recognized by a small median plate of the epigyne, a transverse translucent fertilization duct, large pale areas next to the median plate, and absence of distinct spermathecae.

Description. Same as for the type species.

Comments. A discoidal tegulum and whip-like embolus in *O. pallida* indicate that *Ovtsharenkoia* gen. n. is more closely related to *Hersiliola* than to two other Central Asian genera, *Deltshevia* gen. n. and *Duninia* gen. n., both of which have a globular tegulum and a thick, short embolus. A discoidal tegulum and whip-like embolus are also found in *Hersilia*. Embolus base modified, and differs from that in all other hersiliid genera. The epigyne of *O. pallida* has some similarity with those in *Duninia* gen. n. due to its pockets, but has an entirely different vulva. The type of embolus in *O. pallida* is similar to those in some *Neotama* species (cf. figs 45c, 46c in Baehr and Baehr 1993).

Composition and distribution. Type species only, *Ovtsharenkoia pallida* (Kroneberg, 1875), found widely across the mountains and foothills from southern Turkmenistan to Uzbekistan, Kazakhstan, Kyrgyzstan, and Tajikistan; south to northern Pakistan.

***Ovtsharenkoia pallida* (Kroneberg, 1875)**
Figs 2.3-8, 3.6, 4.8, 5.8, 6.9, 12.1-5

Hersiliola p. Kroneberg, 1875: 13-14, pl. 5, f. 41 (D♀).
Hersiliola p.: Kroneberg 1885: 545-547; Kroneberg 1888: 189-190; Simon 1893: 445; Reimoser 1919: 188; Charitonov 1932: 23; Caporiacco 1935: 142 (Pakistan); Spassky 1952: 196-200 (in part); Bonnet 1957: 2180; Andreeva and Tyshchenko 1969: 382; Andreeva 1976: 30-31 (Tajikistan).

Type material. Lectotype: ♀ (designated here): UZBEKISTAN: Samarkand, A.P. Fedchenko coll. (ZMMU, Ta-1323); paralectotype ♀ (designated here): KYRGYZSTAN: Osh, A.P. Fedchenko coll. (ZMMU, Ta-1324). Vial with paralectotype female contains also adult female of *Oecobius nadiae* (Spassky, 1936). This species and specimen were not mentioned in Kroneberg's text. It seems that he considered this specimen a juvenile *Hersiliola*.

Additional material examined (48 specimens). KAZAKHSTAN (first country record): 1♂, Zhambyl Province, environs of Djambul (=Zhambyl, = Taraz), 11.04.1994, S.V. Ovtchinnikov coll. (ZMMU). KYRGYZSTAN: 1♂, Bishkek (=Frunze), in a house, 17.07.1979, S.L. Zonstein coll. (ZMMU); 1♂, 6♀, 2 subad.♂, 1984, same locality, in buildings, S.V. Ovtchinnikov coll. (ZMMU); 1♂, 1♀, 1984, same locality, S.V. Ovtchinnikov coll. (SMF); 1♂, Bishkek, 8.06.1994, S.V. Ovtchinnikov coll. (ZMMU); 2♂, 1♀, Bishkek, in house, 1.07.1994, S.V. Ovtchinnikov coll. (ZMMU); 4♂, 3♀, Bishkek, 2.06.1994, S.V. Ovtchinnikov coll. (ZMMU); 5♂, 4♀, Bishkek, waste ground, 17.06.2005, S.V. Ovtchinnikov coll. (ZMMU); 3♂, 1♀, Bishkek, waste ground, 23.06.2005, S.V. Ovtchinnikov coll. (ZMMU). PAKISTAN: "Karakoram", no exact locality, 1 subad.♀, L. di Caporiacco coll. (MZUF) [locality published by Caporiacco (1935) as "Chongo, Hot Sulpur Spring, 3000 m", located in Braldu Valley of Karakoram Mts., Baltistan, Pakistan; collected 07.1929]. TURKMENISTAN (first country record): 1♂, Badkhyz, Zyulfagar Mt. Range, 13.04.1993, S.L. Zonstein coll. (ZMMU). UZBEKISTAN: Samarkand Province, Amankutan, 14.07.1967 and Bokhara Province, Ayakagitma, 7.06.1970 (a combined label from two localities), 1♂, 3♀, 5 juv.♀, A. Murtazaev coll. (ZMMU).

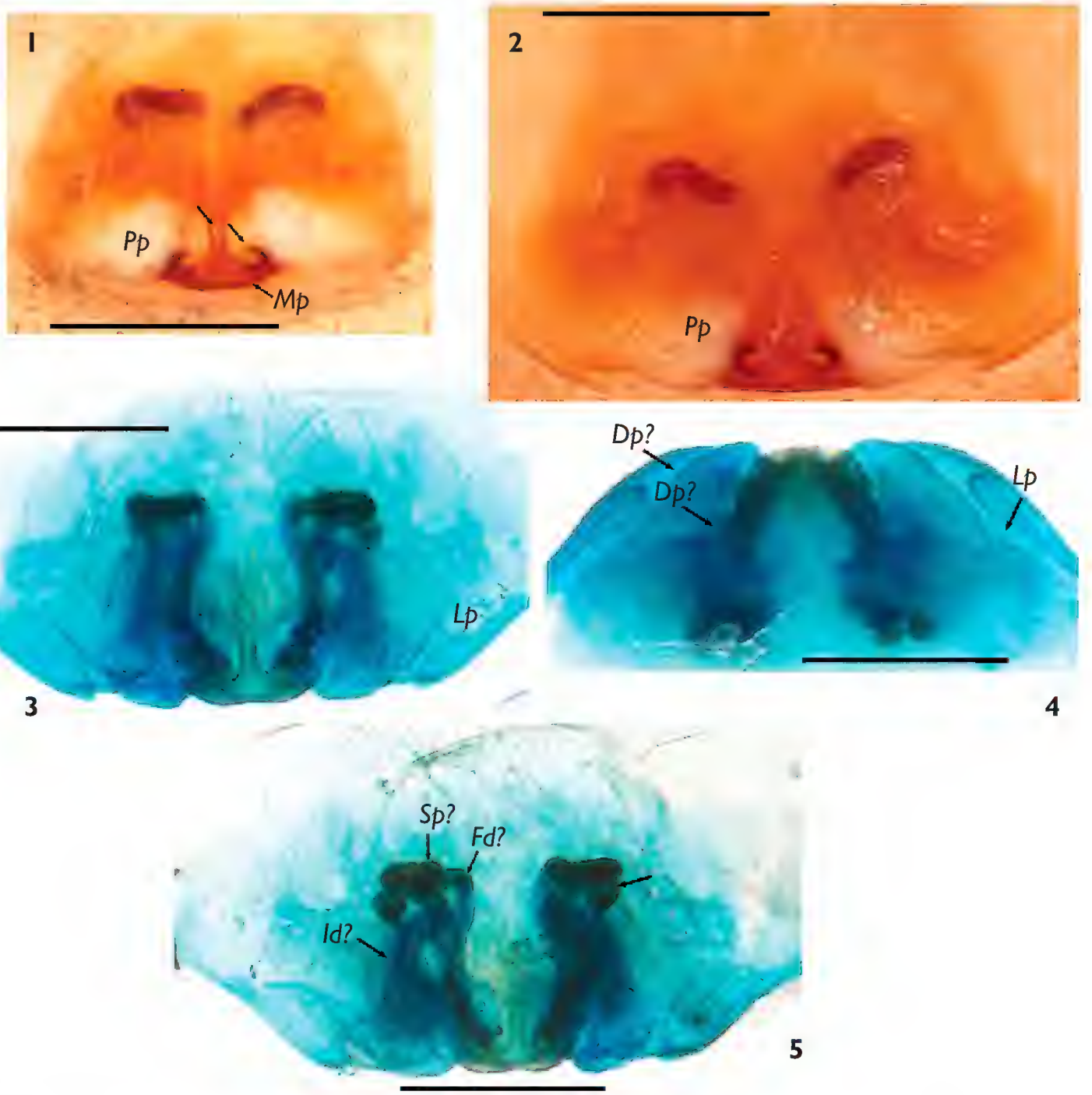


Figure 12. Epigyne of *Ovtsharenkoia pallida.* **1-3** ventral **4** caudal **5** dorsal. Scale = 0.5 mm.

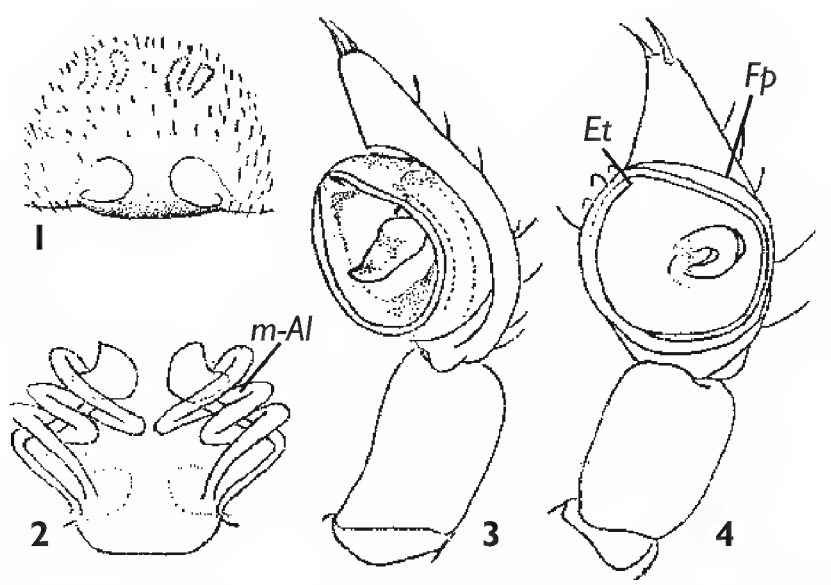


Figure 13. *Hersiliola xinjiangenis*, after Liang and Wang (1989). **1-2** epigyne, ventral and dorsal, respectively **3-4** male palp, retrolateral and ventral, respectively.

Diagnosis. Same as for the genus.

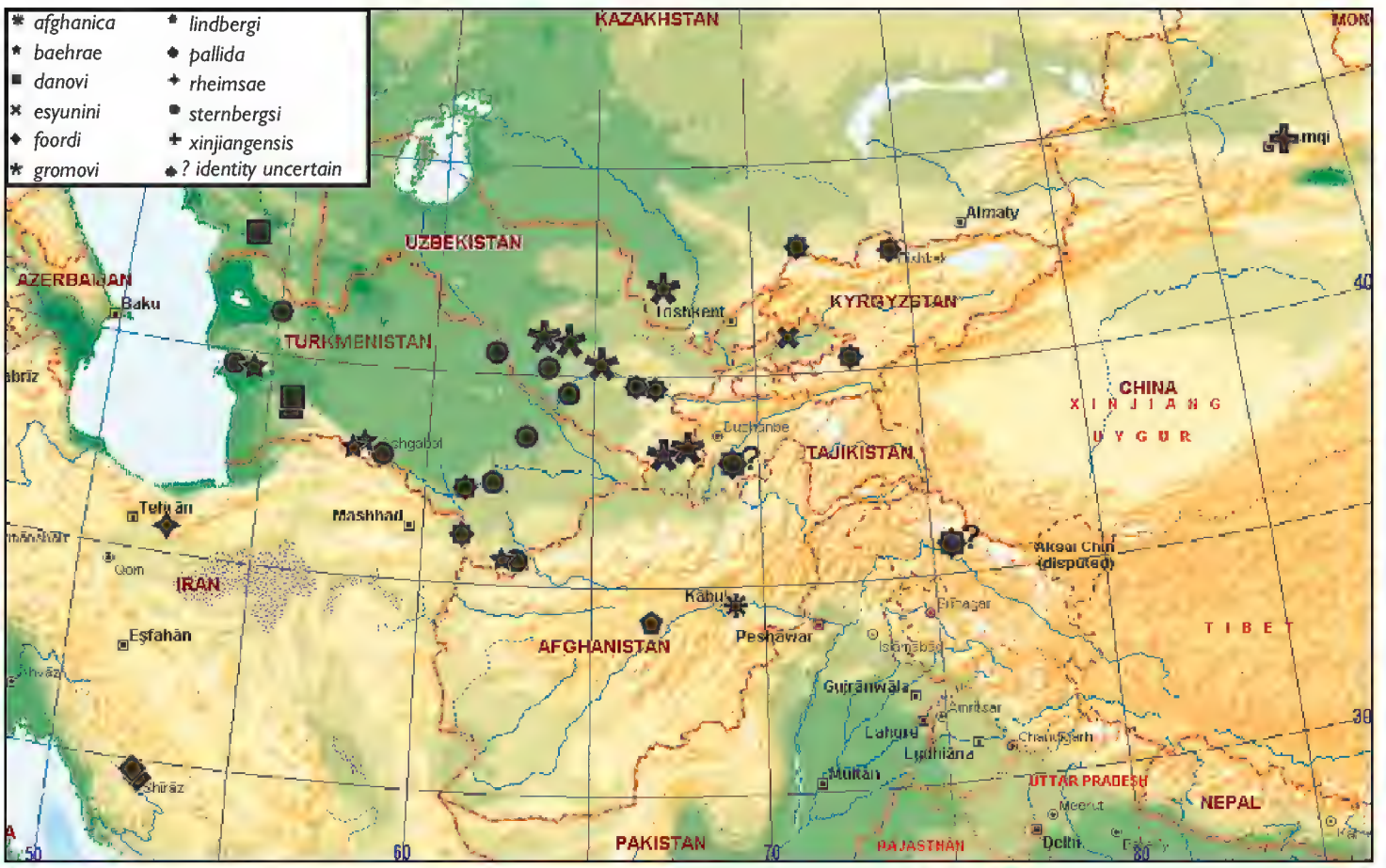
Description. Male (described here for the first time). Total length 4.8. Carapace 2.0 long, 2.25 wide, femur I 4.25 long, femur/carapace length ratio 2.13. Carapace light brown with dark margins, radial dark stripes and median dark band; cephalic part separated from the thoracic part by a dark V-shaped spot. Abdomen light brown with a brown heart spot, transverse stripes and dark sides. Dorsal pattern variable. Venter of abdomen without pattern. Palp as in Figs 3.6, 4.8, 5.8, 6.9, femur and cymbium equal in length, patella+tibia almost as long as cymbium or femur; tegulum round, basal part extended; embolus whip-like, arched; embolus makes a half loop, base of embolus located on retrolateral side; tegulum with two apophyses: apical (?tegular) and basal. Basal apophysis (outgrowth) complicated, subdivided into three parts: lamellate, digitiform retrolateral, and mesal. Embolus passes below mesal part of basal apophysis. Apical apophysis perpendicular to the cymbial axis.

Female. Total length 4.2-6.0. Carapace 2.0-2.5 long, 2.25-2.75 wide, femur I 3.5, femur/carapace length ratio 1.75. Colouration as in male. Epigyne as in Figs 12.1-5, with strongly chitinized small median plate, septum well-developed, its length subequal to length of lateral arms; width of septum variable; windows absent, lateral sides of epigynal plate with small extensions, indicating pockets; aside of median plate epigyne is pale, size of pale part variable; upper part of epigynal plate with a pair of transverse stripes formed by translucent insemination (?) ducts. Distinct spermathecae absent, insemination ducts relatively thin, coils absent; fertilization ducts with globular accessory glands. Insemination ducts have small globular extensions that possibly correspond to spermathecae proper. Size of epigyne variable, although size of median plate is not variable, as well as position of translucent fertilization ducts. Distance between epigastral fold and ducts is the same in large and small epigynes.

Comments. Details of epigynal structure remain uncertain. It is not clear whether openings on the median plates are real copulatory openings or just fovea, origins of copulatory (insemination) ducts as well as the position of the terminal part of the fertilization ducts. Most probably the insemination duct is weakly sclerotized and originates in pockets lying below the epigynal plate.

This species has been described from the important collections of the famous 1868–1871 expedition of Alexei P. Fedchenko (1844–1873) and his wife Olga A. Fedchenko to Russian Turkestan. The original type series includes two female syntypes; the lectotype from Samarkand and paralectotype from Osh are designated here. Andreeva and Tyshchenko (1969) and Andreeva (1976) reported juveniles of this species from Tajikistan (Bishkent Valley, Chiluchor-chashma, 4 juv., 8.05.1965, E. Martynova coll.; Khozratisho Range, 13 km from Muminabad along Obisurkh River valley, 1 juv., 9.06.1966, E. Andreeva coll.). Adults from Tajikistan are unknown.

We also examined a juvenile female reported as *Hersiliola pallida* by Caporiacco (1935) from Karakoram Mts. (Pakistan) which tentatively belongs to this species. This specimen originates from a single high mountain locality, Chongo in Braldu Valley, Baltistan (in the vicinity of the Baltoro Glacier); see Spoleto (1930) for the 1929 Italian expedition route. Although Caporiacco (1935) reported three adult males, these specimens could not be located in MZUF (L. Bartolozii, pers. comm.).



Map 1. Distribution of Hersiliidae in Central Asia.

⬟ *Hersiliola afghanica*; ✖ *Hersiliola esyunini*; ◆ *Hersiliola foordi*; ❋ *Hersiliola lindbergi*; ● *Hersiliola sternbergsi*; ✚ *Hersiliola xinjiangensis*; ★ *Duninia baehrae*; ✦ *Duninia rheimsae*; ■ *Deltshevia danovi*; ✱ *Deltshevia gromovi*; ⬢ *Ovtsharenkoia pallida*; ⬢ ? identity uncertain

Earlier records from lowland Turkmenistan were misidentifications and refer to *Hersiliola sternbergsi* sp. n. (Repetek, Badghyz) or *Duninia baehrae* sp. n. (Badghyz). However, new material collected by S. L. Zonstein in 1993 shows that this species is indeed found in Turkmenistan. It was collected in the very southwest of Badghyz, in the mountainous area bordering Iran (Zyulfagar Range in the watershed of Tejen, which forms an important zoogeographic boundary between the Turkmeno-Khurassan mountains to the west and all Central Asian/Himalayan mountains to the east; see Fet 1994).

Distribution. Kazakhstan, Kyrgyzstan, Pakistan (Baltistan: Karakoram Mts.), Tajikistan, Turkmenistan (south), Uzbekistan. Unlike most species of *Hersililola* and other habitually similar genera, this species is restricted exclusively to mountainous areas and seems to be the only species of hersiliids in the Palaearctic that penetrates human settlements and buildings (Bishkek). It could be a petrophilous species that inhabits cliffs and walls.

Discussion

According to several authors (Baehr and Baehr 1987; Dippenaar-Schoeman and Jocqué 1997; Jocqué and Dippenaar-Schoeman 2006, etc.), Lehtinen (1967) was the first who indicated a close relationship between Hersiliidae and Oecobiidae. However, Lehtinen (1967: 305) clearly indicated that the priority of such a statement belonged

to Bristowe (1938), who placed together Hersiliidae and Urocteidae in a special section among Clubionoidea. At the same time, Caporiacco (1938) suggested a separate superfamily Hersiliiformia that included Hersiliidae and Oecobiidae (but without the cribellate Urocteidae). Later, Mello-Leitão (1941) and Petrunkevitch (1958) proposed a superfamily Oecobioidea that included Oecobiidae, Urocteidae (now a subfamily of Oecobiidae), and Hersiliidae. These three families were united under this superfamily according to the structure of copulatory organs, spination, modification of carapace, eye pattern, and setation. In addition, Crome (1957) found some behavioral similarities between Hersiliidae and Oecobiidae (op. cit. after Lehtinen 1967: 305).

We have no doubt that Oecobiidae are related to Hersiliidae. In addition to clear somatic characters indicated by earlier authors such as eye pattern, an almost round carapace (width equals length), etc., both families have elongated posterior lateral spinnerets and the same way of holding the palps (converging femora, and diverging tibia and terminal joint) in both sexes (Fig. 1.2, 2.1; fig. 71a in Jocqué and Dippenaar-Schoeman 2006). Similarities between Oecobiidae and Hersiliidae even led Strand (1913) to confusion when he described *Oecobius* (*s.l.*) *brachyplura* (Strand, 1913) in *Hersiliola* (see Fet 2008).

Coddington and Levi (1991) placed Oecobiidae and Hersiliidae in Eresoidea. Although Eresidae, like Oecobiidae and Hersiliidae, are very different from the rest of the entelegyne spiders, we doubt that they should be placed in the same superfamily due to entirely different somatic morphology, morphology of copulatory organs, ecology, and behavior.

One of the additional diagnostic features of Hersiliidae, not indicated by earlier authors, is the presence of "accessory glands" in the epigyne. These structures appear to be present in the majority of hersiliid genera such as *Hersilia*, *Hersiliola*, *Deltshevia* gen. n., *Duninia* gen. n., *Yabisi* Rheims & Brescovit, 2004, most of *Tyrotama* Foord & Dippenaar-Schoeman, 2005, *Murricia* Simon, 1882, *Neotama* Baehr & Baehr, 1993, and *Tamopsis* Baehr & Baehr, 1987. Some *Tamopsis* species appear to have two pairs of sack-like structures in addition to spermathecae (cf. figs 25e, 28e in Baehr and Baehr 1987). Neotropical *Iviraiva* Rheims & Brescovit 2004 has acinoform spermathecae (not known in other entelegynes), and it is not clear whether they have accessory glands. Interestingly, structures that appear to be homologous to "accessory glands" have been observed in the related family, namely *Uroctea limbata* (C.L. Koch, 1843) and two unidentified species of *Uroctea* (Oecobiidae) (cf. figs 10-16 in Baum 1972). Baum (1972) called these structures a "blind endender Anhang". They were found in only half the studied species. Unlike in Hersiliidae, "acessory glands" in *Uroctea* are placed close to the spermathecae, but not close to the terminal part of the fertilization duct.

Structures similar to the "accessory glands" of Hersiliidae are common among entelegyne spiders. Most Hadrotarsinae (Theridiidae) have one or even two additional pairs of "spermathecae" (function unknown). Some Hahniidae have a second pair of globular structures called secondary receptacula (spermathecae) (cf. Harm 1966). Primary and secondary receptacula (spermathecae) in most of hahniid species are of the same size. The agelenid genus *Azerithonica* Guseinov, Marusik & Koponen, 2006 has a globular accessory gland at the midpoint of the fertilization duct (Guseinov et al. 2006, fig. 33). Struc-

tures similar to accessory glands are present in other agelenid genera too, such as *Agelescape* and *Malthonica.* In all above mentioned cases in other families, accessory glands are associated with insemination ducts, while in Hersiliidae and some Oecobiidae they are connected (if present) with fertilization ducts. In Hersiliidae, accessory glands are much smaller than spermathecae (receptacula), with the exception of *Deltshevia gromovi* sp. n. where accessory glands are only 2 to 2.5 times smaller than the spermathecae.

It is also worth mentioning that, unlike in all other entelegynes, fertilization ducts in Hersiliidae are long and heavily sclerotized (often more heavily than insemination ducts). Relatively long fertilization ducts are known in Oecobiidae, but they are weakly sclerotized.

Judging from the description provided by Baehr and Baehr (1993) for the Oriental genus *Hersilia*, this genus could be split into several genera. For example, the male of *H. kinabaluensis* Baehr & Baehr, 1993 has a bulbous tegulum, a screw-shaped embolus (filiform or stick-like in other species) directed parallel to the cymbium, and lacks a tegular apophysis (which is present in all other species of the genus). Some females of *Hersilia* have one and some, two pairs of "accessory glands". At the same time, some species of *Hersilia* lack distinct spermatheca (like *Ovtcharenkoia pallida*).

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